Government
Publications

SESSIONAL PAPERS

VOLUME XLI.—PART II.

First Session of Twelfth Legislature

OF THE

PROVINCE OF ONTARIO

SESSION 1909

TORONTO:
Printed and Published by L. K. CAMERON, Printer to the King's Most Excellent Majesty
1909

Printed by WARWICK BROS & RUTTTER, Limited,
TORONTO

1091094

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No. 2.... Estimates for the service of the Province until the Estimates of the year are finally passed. Presented to the Legislature, 17th February, 1909. *Not Printed.* Estimates for the ten months ending 31st October, 1909. Presented to the Legislature, 2nd March, 1909. *Printed.* Estimates (Supplementary) for the year 1909. Presented to the Legislature, 29th March, 1909. *Printed.* Estimates for the year ending 31st October, 1910. Presented to the Legislature, 29th March, 1909. *Printed.*

No. 3.... Report of the Minister of Lands, Forests and Mines of the Province, for the year 1908. Presented to the Legislature, 2nd April, 1909. *Printed.*

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No. 5.... Report of the Commissioners for the Queen Victoria Niagara Falls Park, for the year 1908. Presented to the Legislature, 26th February, 1909. *Printed.*

No. 6.... Report of the Minister of Public Works, for the year 1908. Presented to the Legislature, 19th March, 1909. *Printed.*

No. 7.... Report of the Registrar-General, relating to the Registration of Births, Marriages and Deaths, for the year 1907. Presented to the Legislature, 11th March, 1909. *Printed.*

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No. 8.... Report of the Temiskaming and Northern Ontario Railway Commission, for the year 1908. Presented to the Legislature, 26th February, 1909. *Printed.*

No. 9.... Report of the Ontario Railway and Municipal Board, for the year 1908 Presented to the Legislature, 30th March, 1909. *Printed.*

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No. 11... Financial Statements made by Loan Corporations, Building Societies, Loaning Land Companies and Trust Companies, for the year 1908. Presented to the Legislature, 9th March, 1909. *Printed.*

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No. 15... Report of the Ontario Agricultural and Experimental Union, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 16... Report of the Fruit Grower's Association of Ontario, for the year 1908. Presented to the Legislature, 2nd April, 1909. *Printed.*

No. 17... Report of the Fruit Branch of the Department of Agriculture, for the year 1908. Presented to the Legislature, 8th April, 1909. *Printed.*

No. 18... Report of the Ontario Vegetable Grower's Association, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 19... Report of the Entomological Society of Ontario, for the year 1908. Presented to the Legislature, 24th March, 1909. *Printed.*

No. 20... Report of the Ontario Bee-Keepers' Associations, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 21... Report of the Dairymen's Associations of Ontario, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

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No. 23... Report on the Reforestation of Waste Lands in Southern Ontario, in 1908. Presented to the Legislature, 25th March, 1909. *Printed.*

No. 24... Report of the Women's Institutes of Ontario, for the year 1908. Presented to the Legislature, 26th February, 1909. *Printed.*

No. 25... Report of the Farmers' Institutes of Ontario, for the year 1908. Presented to the Legislature, 26th February, 1909. *Printed.*

No. 26... Report of the Agricultural Societies of Ontario, and the Convention of the Ontario Association of Fairs and Exhibitions, for the year 1908. Presented to the Legislature, 26th February, 1909. *Printed.*

No. 27... Report of the Horticultural Societies of Ontario, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 28... Report of the Bureau of Industries of Ontario, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 29... Report of the Inspectors of Factories of Ontario, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

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No. 31... Report on Highway Improvement in Ontario, for the year 1908. Presented to the Legislature, 19th March, 1909. *Printed.*

No. 32... Report of the Game and Fisheries Department, for the year 1908. Presented to the Legislature, 25th March, 1909. *Printed.*

No. 33... Report of the Ontario Veterinary College, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 34... Report upon the Archives of the Province, for the year 1908. Presented to the Legislature, 6th April, 1909. *Printed.*

No. 35... Report on Neglected and Dependent Children in Ontario, for the year 1908. Presented to the Legislature, 30th March, 1909. *Printed.*

No. 36... Report of the Provincial Board of Health, for the year 1908. Presented to the Legislature, 16th March, 1909. *Printed.*

No. 37... Report of the Inspector of Division Courts, for the year 1908. Presented to the Legislature, 29th March, 1909. *Printed.*

No. 38... Report of the Inspector of Legal Offices, for the year 1908. Presented to the Legislature, 22nd March, 1909. *Printed.*

No. 39... Report of the Inspector of Registry Offices, for the year 1908. Presented to the Legislature, 6th April, 1909. *Printed.*

No. 40... Report of the Secretary and Registrar of Ontario, for the year 1908. Presented to the Legislature, 2nd April, 1909. *Printed.*

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No. 42... Report upon the Common Gaols, Prisons, and Reformatories of Ontario, for the year ending 30th September, 1908. Presented to the Legislature, 2nd April, 1909. *Printed.*

No. 43... Report upon the Hospitals and Charities of Ontario, for the year ending 30th September, 1908. Presented to the Legislature, 2nd April, 1909. *Printed.*

No. 44... Report upon the Operation of the Liquor License Acts in Ontario, for the year 1908. Presented to the Legislature, 26th February, 1909. *Printed.*

No. 45... Report of the Provincial Municipal Auditor, for the year 1908. Presented to the Legislature, 6th April, 1909. *Printed.*

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No. 46... A Return from the Records of the General and Subsequent Elections to the Legislative Assembly on the 8th day of June, 1908, shewing :— (1) The number of Votes Polled for each Candidate in each Electoral District in which there was a contest; (2) The majority whereby each successful Candidate was returned ; (3) The total number of Votes Polled ; (4) The number of Votes remaining unpolled ; (5) The number of names on the Polling Lists : (6) The number of Ballot Papers sent out to each Polling Place ; (7) The Used Ballot Papers ; (8) The Unused Ballot Papers ; (9) The Rejected Ballot Papers ; (10) The Cancelled Ballot Papers ; (11) The Declined Ballot Papers ; (12) The Ballot Papers taken from Polling Places ; (13) A General Summary of Votes cast in each Electoral District ; (14) A similar statement as to any Elections held since the General Election. Presented to the Legislature, 16th February, 1909. *Printed.*

No. 47... Report of the Librarian on the state of the Library. Presented to the Legislature, 17th February, 1909. *Not Printed.*

No. 48... Report of the Hydro-Electric Power Commission of the Province, for the year 1908. Presented to the Legislature, 7th April, 1909. *Printed.*

No. 49... Report shewing expenditure and account of Construction, Right-of-Way purchased and Equipment, owned by the Temiskaming and Northern Ontario Railway Commission. Presented to the Legislature, 12th March, 1909. *Printed.*

No. 50... Northwest Angle Treaty No. 3. Claims made by the Government of Canada, against Ontario. Presented to the Legislature, 6th April, 1909, *Printed.*

No. 51... Bulletin of the Toronto Hospital for the Insane in the interests of Psychiatry in Ontario. Presented to the Legislature, 12th March, 1909. *Printed for distribution only.*

No. 52... Copies of Orders-in-Council passed since the last Session of the Legislature under Section 27 of the Department of Education Act. Presented to the Legislature, 26th February, 1909. *Not printed.*

No. 53... Return to an Order of the House of the Third day of March, 1909, for a Return shewing :—1. The number of Public School Inspectors in the organized Counties of Ontario. 2. Number of Schools under Inspector. 3. The amount of money paid to such Inspectors. 4. The amount of money paid by the County as required by the Act. 5. Total amount of expenses paid by the Counties. 6. Average amount of salary and expenses paid each Inspector by both County and Government. Presented to the Legislature, 12th March, 1909. Mr. *Ferguson (Simcoe.) Printed.*

No. 54... Certain Agreements, made in duplicate, for the supply of printing paper required by the Government, for the term of three years, computed from the first day of January, 1909. Presented to the Legislature, 12th March, 1909. *Printed.*

No. 55... Copies of Orders-in-Council under the provisions of section 187 of "The Judicature Act," and sub-section 2 of section 84 of the "Surrogate Court Act." Presented to the Legislature, 12th March, 1909. *Not Printed.*

No. 56... Return to an Order of the House of the Third day of March, 1909, for a Return shewing :—1. The name of all the Collegiate Institutes, High Schools and Continuation Classes in the Province. 2. Which of these Schools were classed "Approved," in the Academic year, July, 1907, to July, 1908. 3. The change (if any) made in the classification of each such school since July 1st, 1908, to date. 4. The reasons for such change in classification. Presented to the Legislature, 25th March, 1909. Mr. *Stock. Not Printed.*

No. 57... Return of an Order of the House of the Fifteenth day of March, 1909, for a Return from the Master of Titles under the Land Titles Act for the last three years, shewing :—1. Number of absolute and qualified entries of ownership. 2. Number of possessory entries of ownership. 3. Amount added to the Assurance Fund. 4. Total amount of Assurance Fund. 5. The accumulated interest from time to time added. 6. Total losses charged against Insurance Fund. 7. Number of Transfers. 8. Number of Mortgages. 10. Number of leases. 10. Amount of Fees received. 11. Salaries and other expenses of Management. 12. Amount paid by the City of Toronto and County of York to make up deficits in running expenses during the last ten years. Presented to the Legislature, 29th March, 1909. Mr. *McPherson. Not Printed.*

No. 58... Report and Census on the Feeble Minded in Ontario. Presented to the Legislature, 6th April, 1909. *Printed.*

No 59... Statement of the distribution of the Revised and Sessional Statutes, 1897 to 1908. Presented to the Legislature, 31st March, 1909. *Not Printed.*

No. 60... Report of the Corn Grower's Association of Ontario, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 61... Report of the Department of Agriculture of Ontario, for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 62... Report on Farming Opportunities in Ontario, with list of improved Farms for sale. Presented to the Legislature, 1st April, 1909. *Printed for distribution only.*

No. 63... Return to an Order of the House of the Nineteenth day of March, 1909, that the Report of Mr. Starr, who was appointed a Commissioner to enquire into certain matters relating to liquor licenses in the City of Toronto, which has not been printed for public distribution, the original Report be laid upon the Table of the House. Presented to the Legislature, 1st April, 1909. Mr. *Ross* (*Middlesex.*) *Not Printed.*

No. 64... Return to an Order of the House of the Tenth day of March, 1909, for a Return shewing :—Concerning each appointment made by the Government to any educational office, or employment, since the Government's inception of office. 1. Name of appointee. 2. Date of appointment. 3. Nature of employment or office. 4. Outline of duties pertaining thereto. 5. The salary paid. 6. If teacher, master or professor : (*a*) His academic standing. (*b*) The kind of school or schools in which his experience was obtained, and the length of it. (*c*) His professional status, and stating the kind of training school in which he was trained. 7. Concerning the office of Inspector since the creation of the office, and as to such official : (*a*) What previous experience in inspection had he. (*b*) His academic and professional standing qualifying him for his duties. 8. If not holding his engagement still, how was it severed. Presented to the Legislature, 1st April, 1909. Mr. *Stock. Not Printed.*

No. 65... Report upon the Hospitals for the Idiotic and Epileptic of Ontario for the year 1908. Presented to the Legislature, 1st April, 1909. *Printed.*

No. 66... Return to an Order of the House of the Fifth day of April, 1909, that the Report of the Commissioner who held the recent enquiry into the conduct of W. R. Andrews, the License Inspector of East Elgin, together with the evidence on which the same is based, be laid upon the Table of the House. Presented to the Legislature, 6th April, 1909. Mr. *Bowyer. Printed.*

No. 67... Return to an Order of the House of the Eighth day of March, 1909, for a Return shewing :—1. When a branch or sub-department of Forestry was established under the Government of Ontario. 2. The names and duties of all officials and employees of the said branch or sub-department in each year since and including the year 1905. 3. Name of any and all officials of the Government of Ontario whose duty it is to deal with forest conservation or re-forestation or either of them, together with a copy of the Orders-in-Council appointing said officials and copies of regulations defining their duties. 4. A statement, in detail, of the lands that have been set aside as forest reserves since the beginning of the year 1905, giving the location and acreage of each. 5. A statement in detail of the lands set aside for re-forestation since the beginning of the year 1905, giving the location and acreage of each. Presented to the Legislature, 6th April, 1909. Mr. *MacKay* (*Grey.*) *Not printed.*

No. 68... The James Bay Treaty, No. 9, with pay list for 1906. Presented to the Legislature, 6th April, 1909. *Printed.*

No. 69... Return to an Order of the House of the Fifth day of March, 1909, for a Return shewing :—1. How many licenses to operate motor vehicles in the Province was granted during the year 1908. 2. How many of these were granted to non-residents and how many to residents of this Province. 3. Were special Constables appointed by the Provincial Government to enforce the Motor Vehicle Law. If so, how many. 4. What expense in regard to their services or otherwise was undertaken by the Government in that regard. 5. How many convictions were made for breaches of the law. 6. How many were through the efforts of said Constables, if any. 7. What was the nature of the offences, and what number of convictions were secured under each. 8. What number of these convictions were against non-residents. Presented to the Legislature, 8th April, 1909. Mr. *Ross* (*Middlesex*.) *Not printed.*

No. 70... Return to an Order of the House of the Twenty-fourth day of March, 1909, for a Return shewing :—1. How many Emigrants the Salvation Army brought out from Great Britain and Ireland during the season of 1908. 2. How many were male and how many female. 3. How many were placed in the homes of the farmers of the Province of Ontario. 4. The names and addresses of the farmers, and if those so placed remained; how long, with names and addresses of any still remaining. Also, shewing :—1. How many Emigrants the Government of this Province brought out from Great Britain and Ireland during the season of 1908. 2. How many were male and how many female. 3. How many were placed in the homes of the farmers of the Province of Ontario. 4. The names and addresses of the farmers, and if those so placed remained, and if so, how long ; with the names and addresses of any still remaining. Also, shewing :—1. How many farmers the Government induced to come to the Province of Ontario during the year 1908. 2. How many rented, leased, or purchased farms. 3. How many are still on the farms, and if not, why. 5. Shewing any who took up government land, and if so, if they purchased it or acquired it on the homesteading plan. 7. The names and addresses of such farmers. Presented to the Legislature, 8th April, 1909. Mr. *Studholme*. *Not printed.*

SEVENTEENTH ANNUAL REPORT

OF THE

BUREAU OF MINES, 1908.

(VOL. XVII.)

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(PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY OF ONTARIO.)

TORONTO:

Printed and Published by L. K. CAMERON, Printer to the King's Most Excellent Majesty

1908

WARWICK BRO'S & RUTTER, Limited, Printers
TORONTO.

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Map of the Iron Industry of Ontario, showing location of iron deposits, also iron and steel works, after page 204 of the Report.
Map of the Onaman Iron Ranges, geologically colored.
Map of Iron Ranges, Districts of Poplar Lodge and Lake Wendigokan, geologically colored, scale one mile to one inch.
Geological sketch map Larder Lake Region, to accompany Seventeenth Report of Bureau of Mines, 1908, by R. W. Brock and N. L. Bowen.

ERRATA.

Page 7. column 1; 1907 should read 1906.
Page 7. column 3; $13,053 should read $213.053.
Page 21. column 4. last line; 1,117 should read 1,417.
Page 29. sixth line from bottom; $756,174 should read $746,499.

LETTER OF TRANSMISSION.

To His Honor Sir William Mortimer Clark, &c., &c., &c.,
Lieutenant-Governor of the Province of Ontario.

Sir,—I have the honor to transmit herewith for presentation to the Legislative Assembly the Seventeenth Annual Report of the Bureau of Mines.

I have the honor to be, Sir,
Your obedient servant,

F. Cochrane,
Minister of Lands, Forests and Mines

Department of Lands, Forests and Mines,
Toronto, 2nd April, 1908.

INTRODUCTORY LETTER

To the Honorable Frank Cochrane,
Minister of Lands, Forests and Mines.

Sir,—I beg to submit to you herewith for presentation to His Honor the Lieutenant-Governor the Seventeenth Annual Report of the Bureau of Mines.

The review of the mining industry for the year 1907 shows that substantial progress is being made in developing the mineral resources of the Province, the aggregate value of the output of mines and mineral works last year being $2,630,990 in excess of that for 1906, or upwards of $25,000,000 in all. As the value of the production in 1891 was about $4,700,000, and in 1898 $7,236,000, it is evident that mining is at least keeping pace with other staple industries in the general progress of the country. The silver mines of Cobalt are largely helping in this work of development; in 1907 their product had a value almost twice as great as that of the placer gold deposits of the Yukon. Cobalt has, in fact, proven itself to be one of the most important mineral fields discovered in America, or in fact in the world, during the past forty years.

The Summer Mining Classes for the benefit of prospectors and working miners were last year conducted by Messrs. E. G. R. Ardagh and Wyatt Malcolm, who briefly report on the results of their labors.

The Inspector of Mines, Mr. E. T. Corkill, reports on the Mines of Ontario, giving details as to the work carried on in the several mining districts into which the Province naturally divides itself, and at the operating mines and plants. An exception is made of the silver mines of Cobalt, which are fully dealt with in Part II of the Sixteenth Report. An important part of the Inspector's duties is to see that proper precautions as required by law are taken to protect the lives and safety of mining employees, and attention is directed to Mr. Corkill's remarks on the subject of mining accidents, and the necessity for vigilance and care in the handling of explosives.

One of the Bureau's functions is to ascertain and study the geology of the outlying part of the Province, very much of which is not yet accurately known, and accordingly Mr. Arthur L. Parsons of Toronto University was attached as geologist to a surveying party sent out under the leadership of Mr. Alexander Niven, O.L.S., to define the boundary between the districts of Algoma and Thunder Bay. Mr. Parson's report on the geology of the Thunder Bay-Algoma Boundary will be found in the present volume. While it does not reveal the existence of promising fields for mineral prospectors, the possibility of their occurrence is by no means precluded, and the account will be read with interest as descriptive of a region concerning which very little has hitherto been known.

Dr. A. P. Coleman and Mr. E. S. Moore continued in 1907 the explorations begun the previous year east of lake Nipigon, their chief object being to examine and map the outcrops of Iron formation known to exist in that region. Their respective reports on the Iron Ranges East of Lake Nipigon are accompanied by a geological map showing the territory examined during the two years, and by a smaller sketch map of the ground traversed by Mr. Moore separately.

The Iron and Steel Industry of Ontario is made the subject of a special report by Mr. George C. Mackenzie, whose technical attainments and experience well qualified him for the task. Mr. Mackenzie deals with all sides of the subject,—ore supplies, blast furnace methods, costs, etc.,—and describes all the existing steel and iron making

plants in Ontario, accompanying his descriptions and report generally with illustrations and diagrams. Mr. Mckenzie's account of what is being done elsewhere in the preparation of low grade magnetic ore for use in the blast furnace has special interest for this Province, where many deposits of such ore exist. There are problems in the magnetic concentration of our silicious or impure magnetites remaining to be studied, and it is probable Mr. Mackenzie may further pursue the subject on behalf of the Bureau.

The publications of the Bureau of Mines now comprise seventeen Annual Reports, beginning with the year 1891, and a few bulletins on special subjects. Each of these Reports contains its own index, but the need of a General Index permitting ready access to all the information given in all the Reports on any one subject has been found very urgent. Many of the Bureau's annual volumes, both of earlier and recent years, are out of print, but sets of the Reports have been placed in a number of public, university and technical college libraries, not only in Canada, but also in the United States and Great Britain, where they can be consulted. Mr. Frank Nicolas of Ottawa, who recently completed an Index of the Reports of the Geological Survey of Canada from 1885 to 1906, has been commissioned to prepare a General Index of the Bureau's publications, which will also include the Report of the Royal Commission on the Mineral Resources of Ontario (1890). The work is well advanced, and it is thought may be ready for distribution about the end of 1908 or beginning of 1909.

I have the honor to be, Sir,

Your obedient servant,

Thos. W. Gibson,
Deputy Minister of Mines.

Office of the Bureau of Mines,
Toronto, 31st March, 1908.

REPORT OF THE BUREAU OF MINES 1908

VOL XVII

Statistical Review

By Thos. W. Gibson, Deputy Minister of Mines

In 1907 the mines and mineral works of Ontario yielded minerals and mineral products having an aggregate value in the form produced of $25,019,373, as compared with $22,388,383 in 1906, an increase of about 12 per cent. This is the largest output yet recorded. A period of marked growth in the mining industry of the Province set in about three years ago, and that the impetus has not spent its force is seen from the following figures showing the value of the mineral production during each of the last four years:

Year.	Value mineral production	Increase over previous year.
	$	Per cent.
1904	11,572,647	.....
1905	17,854,295	54
1906	22,388,383	25
1907	25,019,373	12

The increase in 1907 over 1904 was no less than 116 per cent. To some extent the advance in value is owing to the higher prices for mineral products which have ruled during the last few years, but much the larger part is due to an increase in production in the characteristic minerals of the Province, viz., nickel, copper, silver and petroleum. To these should be added pig iron and Portland cement.

The following table gives a summary of the mineral production for the year 1907, together with the number of employees in the various branches of the industry and the wages paid them.

Table 1.—Mineral Production of Ontario in 1907

Product.	Quantity.	Value.	Employees.	Wages.
Metallic:		$	No.	$
Gold.....ounces	3,810	66,399	160	125,537
Silver ..... "	10,028,259	6,157,871	2,038	1,532,067
Cobalt .....tons	739	92,751		
Nickel ..... "	10,972	2,271,616	1,824	1,384,027
Copper ..... "	7,303	1,045,511		
Iron Ore ..... "	205,295	482,532	276	192,063
Pig Iron ..... "	286,216	4,716,857	1,242(a)	808,681(a)
	.....	14,833,537	5,540	4,042,375
Less value Ontario iron ore (120,177 tons) smelted into pig iron.....	.....	282,702	.....	.....
Net metallic production	.....	14,550,835	5,540	4,042,375

(a) Includes steel-making.

Table I.—Continued

Product.	Quantity.	Value.	Employees.	Wages.
Non-metallic :		$	No.	$
Arsenic ..... tons	2,958	40,104	(b)	(b)
Brick, common ..... No.	273,882,000	2,109,978	2,850	1,015,000
Tile, drain ..... "	15,578,000	250,122		
Brick, pressed ..... "	69,763,423	648,683	508	284,881
" paving ..... "	3,732,220	73,270		
Building and crushed stone	.....	675,000	1,100	480,000
Calcium carbide ..... tons	2,667	173,763	63	37,613
Cement, Portland ..... bbl.	1,853,692	2,777,478	1,237	699,464
" natural rock ..... "	7,239	5,097	22	2,029
Corundum ..... tons	2,683	242,603	247	168,333
Feldspar ..... "	12,328	30,375	71	23,359
Graphite ..... "	2,000	20,000	20	15,000
Gypsum ..... "	10,186	19,652	18	14,370
Iron pyrites ..... "	15,755	51,842	137	75,365
Lime ..... bush.	2,650,000	418,700	415	155,000
Mica ..... tons	456	82,929	158	63,450
Natural gas	.....	746,499	191	110,832
Peat fuel ..... tons	200	1,040	6	1,500
Petroleum ..... imp. gal.	27,621,851	1,049 631(c)	435(d)	265,316(d)
Pottery	.....	54,585	55	20,220
Quartz ..... tons	56,585	124,148	101	52,400
Salt ..... "	62,806	432,936	194	85,935
Sewer pipe	.....	435,088	232	132,884
Talc ..... tons	1,870	5,010	13	1,869
Non-metallic production	.....	10,468,538	8,073	3,704,820
Add net metallic "	.....	14,550,835	5,540	4,042,375
Totals	.....	25,019,373	13,613	7,747,195
Totals for 1906	.....	22,388,383	12,551	6,048,328

(b) Included in Silver and Cobalt. (c) Value crude product, exclusive of Dominion Government bounty.
(d) Petroleum refining works only.

The value of the net metallic production in 1906 was $13,353,080, and in 1907 it was $14,550,835, a gain of $1,197,755, or 9 per cent. The products in the non-metallic list were valued in 1906 at $9,035,303, and in 1907 at $10,468,538, an increase of $1,433,235, or about 16 per cent. The proportional gain was thus greater in the non-metallic than in the metallic products, but the contribution of the latter to the total was considerably more than that of the former, being 58 per cent. of the whole, as against 42 per cent. for the non-metallic substances.

The following table shows the increase or decrease in the value of the various products in 1907 as compared with 1906. From this it will be seen that of the metals, by much the largest gain was in silver, the value of which in 1907 was 66 per cent. greater than in the year before. A considerable falling off will be observed in nickel, the value of which declined 40 per cent. This is not to be attributed to any decrease in the output of the metal, the product in 1907 being in fact a few tons in excess of the year previous, but to a lower valuation placed by the producers on the nickel contents of their mattes. The non-metallic products show no decreases of moment; on the other hand, there are many increases, the principal of which, among manufactured articles, are pressed brick and Portland cement, and among crude substances, petroleum and natural gas.

Table II.—Comparative Value Mineral Production 1906 and 1907

Product.	1906.	1907.	Change.	
Metallic:	$	$		$
Gold	66,193	66,399	I.	206
Silver	3,689,286	6,157,871	I.	2,468,585
Cobalt	80,704	92,751	I.	23,722
Nickel	3,839,419	2,271,616	D.	1,567,803
Copper	960,813	1,045,511	I.	84,698
Platinum metals	5,652	.....	D.	5,652
Lead	93,500	.....	D.	93,500
Iron ore	301,032	482,532	I.	181,500
Pig iron	4,554,247	4,716,857	I.	162,610
Zinc ore	6,000	.....	D.	6,000

Table II.—Continued

Product.	1907.	1907.	Change.	
Non-metallic:	$	$		$
Arsenic	15,858	40,104	I.	24,246
Brick, common	2,157,000	2,109,978	D.	47,022
Tile, drain	252,500	250,122	D.	2,378
Brick, pressed	337,795	648,683	I.	310,888
" paving	45,000	73,270	I.	28,270
Building and crushed stone	660,000	675,000	I	15,000
Calcium carbide	162,780	173,763	I.	10,983
Cement, Portland	2,381,014	2,777,478	I.	396,464
" natural rock	6,000	5,097	D.	903
Corundum	262,448	242,608	D.	19,840
Feldspar	43,849	30,375	D.	13,474
Graphite	15,000	20,000	I.	5,000
Gypsum	6,605	19,652	I.	13,047
Iron pyrites	40,583	51,842	I.	11,259
Lime	496,785	418,700	D.	78,085
Mica	69,041	82,929	I.	13,888
Natural gas	533,446	746,499	I.	13,053
Peat fuel	900	1,040	I.	140
Petroleum	761,546	1,049,631	I.	288,085
Pottery	65,000	54,585	D.	10,415
Quartz	65,765	124,148	I.	58,383
Salt	367,738	432,936	I.	65,198
Sewer pipe	279,620	435,088	I.	155,468
Sodalite	6,000	.....	D.	6,000
Talc	3,030	5,010	I.	1,980

In Table III is given a summary of the mineral production for the last five years, showing that the growth in value already mentioned has been general throughout the entire list of products, both metallic and non-metallic. It will also be observed that in 1905 the metalliferous branches of the mining industry for the first time surpassed the non-metalliferous in total value of output, and that although both are growing in importance, the former well maintains the lead.

Table III.—Mineral Production, 1903 to 1907

Product.	1903.	1904.	1905.	1906.	1907.
Metallic:	$	$	$	$	$
Gold	188,036	40,000	99,885	66,193	66,399
Silver	8,949	111,887	1,372,877	3,689,286	6,157,871
Platinum	.....	10,452	28,116	5,652	.....
Palladium	.....	18,564			
Cobalt	.....	36,620	100,000	80,704	92,751
Copper	716,726	297,126	688,993	960,813	1,045,511
Nickel	2,499,068	1,516,747	3,354,934	3,839,419	2,271,616
Iron ore	450,099	108,068	227,909	301,032	482,532
Pig iron	1,491,696	1,811,664	3,909,527	4,554,247	4,716,857
Steel	304,580	1,188,319	3,321,884	(a)	(a)
Lead ore	.....	11,000	.....	.....	.....
Pig lead	1,500	2,500	9,000	93,500	.....
Molybdenite	1,275	.....	.....	.....	.....
Zinc ore	17,000	3,700	.....	6,000	.....
	5,678,929	5,321,677	13,113,125	13,596,846	14,833,537
Less value Ontario iron ore smelted into pig iron, and pig iron converted into steel	436,354	250,000	2,912,115	(b) 243,766	(b) 282,702
Net metallic production	5,242,575	4,906,667	10,201,010	13,353,080	14,550,835
Non-metallic:					
Actinolite	1,650	102	.....	.....	.....
Arsenic	15,420	903	2,693	15,858	40,104
Brick, common	1,561,700	1,430,000	1,937,500	2,157,000	2,109,978
Brick, paving	45,288	55,450	54,000	45,000	73,270
Brick, pressed	218,550	226,750	234,000	337,795	648,683
Building and crushed stone	815,000	700,000	700,000	660,000	675,000
Carbide of calcium	144,000	152,295	156,755	162,780	173,763
Cement, natural rock	69,319	65,250	10,402	6,000	5,097
Cement, Portland	1,182,799	1,239,971	1,783,451	2,381,014	2,777,478
Corundum	87,600	150,645	152,464	262,448	242,608
Feldspar	20,046	21,966	29,968	43,849	30,375
Graphite	20,636	4,700	9,895	15,000	20,000
Gypsum	7,910	10,674	4,118	6,605	19,652

(a) Steel production not included. (b) Iron ore only.

Table III.—Continued

Product.	1903.	1904.	1905.	1906.	1907
Non-metallic:	$	$	$	$	$
Iron pyrites	21,693	13,716	21,885	40,583	51,842
Lime	520,000	406,800	424,700	496,785	418,700
Mica	102,205	37,847	50,446	69,041	82,929
Natural gas	196,535	253,524	316,476	533,446	746,499
Peat fuel	3,300	2,400	1,200	900	1,040
Petroleum products	1,586,674	904,437	898,545	761,546	(c) 1,049,631
Pottery	160,000	100,000	60,000	65,000	54,585
Quartz				65,765	124,148
Salt	388,097	362,621	356,783	367,738	432,936
Sewer pipe	199,971	283,000	225,835	279,620	435,088
Sodalite				6 000	
Talc	2,625	2,919	2,240	3,030	5,010
Tile, drain	227,000	210,000	220,000	252,500	250,122
Total non-metallic production	7,628,018	6,665,970	7,653,286	9,035,303	10,468,538
Add metallic production	5,242,575	4,906,677	10,201,010	13,353,080	14,550,835
Total production	12,870,593	11,572,647	17,854,296	22,388,383	25,019,373

(c) Crude petroleum only.

Pursuing the practice followed in the two preceding annual Reports of the Bureau, and in order to admit of a fair comparison between the mineral production of Ontario and that of some of the other Provinces of the Dominion, as given in their official reports, or of Canada as a whole as given by the Geological Survey, the following table has been compiled, showing the value of the Ontario output on the basis of the values of the refined metals, instead of on that of their values at the pit's mouth, or in the product of the smelting furnaces. The latter is the system of computation which has been followed by the Bureau from the beginning, but as the result is to ascribe to the mineral yield of the Province a much lower value than it would have were the method of the Geological Survey or the other Provinces employed, it is only proper that the figures should also be presented on the "refined value" basis, so that mistaken conclusions should not be formed regarding the relative place of Ontario as a mineral-producing Province.

Table IV.—Mineral Production 1907 on "refined value" basis

Product.	Quantity.	Price.	Value.
Metallic:			$
Gold oz.	3,810	$17.43 per oz.	66,399
Silver "	10,028,259	65.327 cts. per oz.	6,551,608
Cobalt tons.	739	$2 per lb. as Cobalt oxide, CoO.	3,600,538
Nickel "	10,972	45 cts. per lb.	9,874,800
Copper "	7,303	20 " "	2,921,200
Iron ore "	205,295	$2.35 per ton	482,532
Pig iron "	286,216	$16.48 "	4,716,857
			28,213,934
Non-metallic:			
Value per Table I			10,468,538
Gross production			38,682,472

It is not asserted that the foregoing table is an accurate presentation of the case. It is clearly inadmissible to value the cobalt contents of the silver ores of the Cobalt mines at their value as cobalt oxide, for the reason that the world's consumption of cobalt oxide per annum is much less than the quantity derivable from the ores of the Cobalt camp alone, and there can be no doubt that if the whole of the cobalt raised along with the silver of that district were thrown upon the market in the form of oxide the price would at once fall below its present level. For the cobalt contents of their ores the mining companies receive in most cases nothing at all: a large part of the

cobalt produced from the Cobalt mines since their opening has not yet gone into consumption in the arts, and there can be no good reason therefore for valuing the output of this metal at a price which it would not bring in the open market were it put on sale. But this is one of the results which follow from the adoption of the "refined value" basis.

As to the other three items, namely, silver, nickel and copper, there is not much increase in the value of the first as compared with Table I. The value in the latter table is the amount received by the mine owners for their product, as it was marketed month by month, which is not necessarily equivalent to the amount calculated at the average price of silver for the year. As for nickel, it leaves Ontario in the form of matte, and much money and labor is expended upon it in the United States or England before it is put in form to be utilized in the arts. The actual prices at which large sales of refined nickel are made are not often reported in the trade journals, and it may be taken for granted that the prices which are quoted in their columns are in no case less than the reality. It is difficult to arrive at the real value of the nickel as it exists in the matte, for the reason that there is no open market for matte, the refiners being the same or largely the same as the producers. On the one hand, it would not be fair to take the value of refined nickel, say in the New York market, deduct the cost of shipping and refining the matte, and call the remainder the value of the nickel in the unrefined matte, for this would not allow any share of the profit to be allocated to the process of refining. Nor, on the other hand, is it fair to take the value of the nickel in the form of ore as this may be shown in isolated sales,—for there is no market for nickel ore in the same sense as for iron ore, since here also the producers are the smelters—and add to it the cost of roasting and smelting, for this would allow nothing for profit in the latter operations. The proper method would appear to be to take the value of the refined article, as shown by the average price received for sales during any given time, say a calendar year, and in order to find the value of the nickel in the matte, deduct the cost of shipping and refining it and a share of the profit proportional to the cost of refining. Similarly, to get the value of the nickel in the ore, the cost of the necessary treatment after it reaches the pit's mouth, roasting, smelting, etc., and a fair proportion of profit based on the cost of these several operations should be deducted from the matte value of the metal. The data for calculations of this kind are in the hands of the producers of nickel, and it is presumed the values returned by them to the Bureau have relation to the facts. At any rate, the figures set opposite the item of nickel in Table I are the aggregate of those received from the mining companies themselves, though, as has already been remarked, the valuation per pound is lower than it was in 1906, notwithstanding that market quotations for the refined metal remained at the same figure. The value of nickel in the matte as given by the producers in Table I is 10.3 cents per pound, compared with 45 cents per pound, assumed in Table II to be the average value of refined nickel in New York for the year.

The foregoing remarks are largely applicable also to copper, since the great bulk of the copper produced in Ontario comes from the nickel-copper mines of the Sudbury district. Owing, however, to the world-wide production and marketing of copper, its actual value in the refined form is much more easily ascertained. It will be noted that the price at which copper, as given in Table I is valued by the producers is 7.15 cents per pound, as against 20 cents per pound assumed in Table II as being the average value of refined copper in New York during the year 1907.

Table IV shows that the total value of Ontario's mineral production in 1907 on the "refined value" basis was $38,682,472, exclusive of steel. The Geological Survey Department estimates the value of the production of the whole of Canada at $86,183,477, so that Ontario's share was about 45 per cent., or adding the refined value of cobalt as given in the foregoing table to the total production as estimated by the Survey (which gives in the case of cobalt the unrefined value only) the proportion of the whole was 43 per cent.

The output of British Columbia for last year is valued at $25,882,560, the metals being computed at their refined value, less 5 per cent. for silver and 10 per cent. for lead. Of this $7,637,713 is for coal and coke, the total metalliferous output being valued at $17,044,847, as against $28,398,568 for Ontario, on the same basis of computation.

It is therefore apparent that Ontario has taken the lead among the Provinces of Canada in the production of minerals, especially those of a metalliferous character.

Gold

Gold mining in Ontario has not yet reached the status of a profitable industry. The yield in 1907 was 3,810 ounces of bullion, worth $66,399, the contributors to the output being the Shakespeare Gold Mining Company, whose mine is situated in the township of that name, the St. Anthony Gold Mining Company, of Sturgeon lake, and the Imperial Gold Mines, Limited, the company which has been operating the Laurentian mine near Gold Rock in the Manitou region. The last-mentioned property had much the largest production, and its reputed richness has stimulated interest in a number of other prospects in the same region.

The placer deposits on the Vermilion river are still being experimented with by Mr. J. B. Miller and others, under the direction of Mr. R. H. Ahn, but as yet the actual recovery of gold has been unimportant.

Larder Lake Region

None of the claims taken up in the Larder Lake district have yet been placed upon a producing basis, but considerable development work has been done upon some of them, and the ore will shortly be put to the test in stamp mills, one or two of which are going in. So far as can be judged from present indications, the Larder Lake ore will not be high grade, but if the bodies prove to be of good size, the gold contents will probably be sufficient to yield a fair margin of profit. Some excitement was caused in the early spring of the present year (1908) by the exhibition of rich samples of ore from the Harris-Maxwell mine, but these came from a small pocket only, and it is not claimed that the run of the mine will exceed $10 per ton.

Prof. R. W. Brock and his assistant, Mr. N. L. Bowen, made an examination of the district in the neighborhood of Larder lake during the summer of 1907, the former's report being published in the Bureau's Sixteenth Annual Volume. Mr. Bowen remained in the field after Prof. Brock took his departure, and the following notes, summarized from his report, give additional particulars.

A revised map of the region showing the geology and also the claims which have been surveyed on the ground, accompanies this Report.

With respect to the rocks in which gold occurs, Mr. Bowen says:—

The best showings have as yet been found on a band of rusty weathering dolomitic rock. It consists in places almost entirely of lime-magnesia-iron carbonate cut by quartz stringers which have altered some of the carbonate to a green mineral, in places serpentine, in others talc. At other places, again, the amount of carbonate does not exceed twenty per cent., the rock between the quartz stringers being a very hard greenish to grayish material, speckled with pyrite and found under the microscope to consist of plagioclase and orthoclase, comparatively fresh and speckled with carbonate, generally in well formed rhombohedra. A little quartz is present but whether it has come from the stringers or not cannot be determined. The band having these typical characteristics is observed on the Harris-Maxwell, Richardson and Thompson claims, at the south end of Bear Lake, on H S 103, and to the east on some of the claims of the Kerr, Reddick and Chesterville groups. The width varies from over two hundred feet to about twelve feet. On H S 109, near Larder city, and to the south of Spoon's bay, are small outcrops which probably represent the same band. On Diamond lake the typical band is again observed. Smaller outlying patches are noted as at Spoon's bay townsite, and on the shores of Fitzpatrick bay.

Lower Huronian

Mr. Bowen notes that the base of the Huronian for a few feet contains numerous angular to sub-angular fragments of the rock immediately beneath it. On mining claim H J B 32, situated on the north shore of the northeast arm of Larder lake, "the bedded Huronian, almost flat-lying, rests on highly tilted Keewatin schists. The line between the two is quite sharp and a hand specimen may be broken off showing the two rocks. No basal conglomerate was noted. A good section of the Huronian is to be obtained on Chanmanis (Sheminis) hill.[1] This hill, which is such a prominent topographic feature, lies in the Province of Quebec, about one-quarter of a mile southeast of the 40th mile post on the interprovincial boundary. It rises to an elevation of 756 feet above Larder lake[2] and the joint planes have developed cliff faces which afford an excellent section. The lowest rock here observable is a well bedded slate, having a thickness of about 300 feet, overlain by about 150 feet of quartzite, which becomes coarser and coarser, acquiring pebbles and passing into conglomerate which caps the hill with a thickness of 100 feet or more."

The Huronian rocks southwest from Fitzpatrick's bay have been much disturbed, tilted and folded. In the vicinity of Larder city the pebbles in the conglomerate have been squeezed into long lenses; the matrix is quite schistose. In McVittie and McGarry townships the Huronian is also much disturbed.

Post-Lower-Huronian

Mr. Bowen finds that in places the diabase differentiates into pyroxenite, gabbro, diorite and syenite. He notes also the presence of a red feldspar sometimes developed in abundance in the diabase. A thin section from a diabase dike on island A. A. under the microscope was found to consist of plagioclase and hornblende (showing "rests" of monoclinic pyroxene). The hornblende is further altered to actinolite and chlorite. Epidote and ilmenite, partly altered to leucoxene, are also present. A small quantity of quartz in micrographic inter-growth with feldspar occurs. Ophitic texture is marked. Another thin section of the diabase to the southwest is similar to this, but the presence of albite, in addition to basic plagioclase, is noted.

Ores of the Keewatin

Mr. Bowen says that showings of quartz are common in all phases of the Keewatin. Though the quartz stringers in the greenstone carry sulphides, gold does not occur. The quartz stringers in the gold-bearing rock—the rusty dolomitic (?) band—are generally only a few inches wide. A vein two feet wide on the Chesterville group, however, carries fine samples of free gold. It has been traced two hundred feet. Location H S 103 and the original To-ne-ne showing at the south end of Bear lake have characteristic quartz stringers cutting the rusty band and carrying some values.

On the Harris-Maxwell claim the "small branching dike of black trap-like material" mentioned by Prof. Brock is shown by Mr. Bowen to be a tourmaline vein.

South of Larder lake, near the landing on Sharp's creek, the quartz stringers in the Keewatin green schist are much darker in color, and have the appearance of a fine grained marble. Free gold was not found by Mr. Bowen. Sixteen hundred pounds of ore, from a claim in this area (The Combined Goldfields Limited) were sent to the Kingston School of Mining. A mill test returned $8.14 in gold per ton. The ore was the product of the last shot put in. The hole was twenty feet deep.

The "Searchlight Larder Lake Mines," two miles to the southeast of the last named claim is geologically similar to the "Combined Goldfields."

[1] Bur. Min. Rep. Vol. XI., p. 218.

[2] W. A. Parks in Summary Rep. Geo. Sur. Can. 1904.

Company Holdings

A list of surveyed mining claims held by mining companies operating in this Division has been compiled in the recorder's office from surveyors' lists, as follows:—

Blanche River Mining Co ..... H. S. 1, H. S. 51.
Blue Bell Co. (transfers not yet recorded) ..... S.V. 501-3, 507-13, 516-20, 522-5, and others the survey numbers of which are not known.
Big Fete Canadian Mines ..... H. F. 31, 34, 36 and others.
Buffalo Larder Gold Mines, Limited ..... H. S. 158-9, 160 (patented).
Dardanelles Mining Co ..... H. S. 147, 149, 161, 162, 163, 190.
Cobalt and Larder Lake Gold Mining Co ..... H. S. 107 to H. S. 111.
Great Northern Larder Lake Mining Co., Limited ..... H. S. 221 to 234 inclusive.
Harris-Maxwell L. L. Gold Mining Co ..... H. S. 114, 115.
Highland Mary Gold Mines, Limited ..... H. S. 510 to 539 inclusive.
Imperial Larder Lake Amalgamated Mines, Limited ..... L. M. 56 to 59; 87 to 97 (not transferred to this Company in Recorder's books).
International Mines ..... T. C. 1 to 12, R.S.C. 1 to 20, 26 to 32 (not transferred to Co.)
Kerr ..... H. S. 164, 165, 166.
Le Roi Mining Co., Limited ..... H. S. 79, 80, 86, 235 to 252 inclusive.
Larder Lake Proprietary, Limited ..... H. F. 37, 38, 39, L. M. 45 to 55 inclusive; L. M. 79 to 86 inclusive; H. S. 123, 124; H. S. 126, 191; H. F. 35; (L.M. 52, 55 not yet transferred).
Larder Lake Commercial Travellers' Syndicate ..... H. F. 142 to 151 (not transferred on books).
Larder Central Gold Fields, Limited ..... H. F. 52 to H. F. 63 (not transferred to Co.)
Little Larder Lake Gold Min. Co., Limited ..... J. S. 129 to J. S. 140.
Lucky Boys' Gold Mines, Limited ..... H. S. 128 to 131, 139 to 141, 169, 170, 172, 173, 174, 177, 184, 185, 186, 187, 188, 189, 176, 179 (176 not transferred).
Lincoln-Nipissing Development Co., Limited ..... C. E. 3, 4, 5, 6; L. M. 8 to 26 inclusive.
Murphy Mines, Limited ..... H. S. 74 to 78, 81 to 85, 87 to 93.
Martin Larder Gold Mines, Limited ..... C. E. 120 to 131.
Manhattan Cobalt Mining Co ..... J. S. 125 to 128, L. M. 60 to 73, H. S. 150, 151, 153, 154, 155, 156, 157.
Northern Larder Lake Mining Co., Limited ..... H. S. 94, H. S. 200 to 218 (not transferred on books).
North Canadian Gold Mines, Limited ..... B. G. 204 to 235.
New Liskeard and Northern Ontario Development Co., Limited ..... J. B. 17, 18, 19, 20, 22, 25 and others.
Queen City Mining and Development Co., Limited ..... L. M. 3, 4, 5.
Reddick Mines ..... H. J. B. 28 to 33, H. F. 33.
Silver Five Mining Co ..... H. F. 78 to 85, 86, 87, 90, 91, 92 (not all transferred).
Richardson, W. M ..... L. M. 30, 31, 32.

The following table shows the course of gold mining in this Province during the last five years:

Table V.—Gold Mining, 1903 to 1907

Schedule.	1903	1904	1905	1906	1907
Mines worked ..... Number	19	12	13	14	6
Ore treated ..... tons	32,347	.....	17,510	11,791	12,989
Gold product ..... ounces	10,383	2,285	5,541	3,926	3,810
Gold value ..... $	188,036	40,000	99,885	66,193	66,399
Men above ground ..... Number	243	100	175	147	96
Men below ground ..... Number	250	130	134	97	64
Wages paid ..... $	245,490	133,000	175,818	152,011	125,537

Silver

As Part II of the Sixteenth Report of the Bureau of Mines contains a revision by Prof. W. G. Miller, Provincial Geologist, of his report on the Cobalt camp, and is being published concurrently with the present volume, it is unnecessary here to deal at any length with the silver production of the Province, which comes almost wholly from the Cobalt mines. Ontario now occupies an important position in the silver-producing communities of the world. Only three states of the Union, viz., Montana, Colorado and Utah, surpassed the output of Ontario in 1907, and the Ontario product is now more than three times that of British Columbia, the only other Province of the Dominion in which silver is obtained in any quantity. The combined yield of Ontario and British Columbia, which for 1907 was about thirteen million ounces, would place Canada ahead of any one of the United States. The world's production of silver is now about 160 millions of ounces annually.[3] Mexico is the largest producer, her

[3]The estimate varies. The Engineering and Mining Journal, New York, January 4, 1908 p. 5, gives the world's production, 1907, as 185,035,496 ounces.

mines yielding last year not far from 58 million ounces, the United States coming next with an output of 56,925,911 ounces in 1907. Australia is third, the famous Broken Hill mine in New South Wales alone producing 5 or 6 million ounces yearly, and Canada, mainly by virtue of the Cobalt mines, takes fourth place.

It is somewhat remarkable that the continent of North America should now be providing more than two-thirds of the world's supply of silver. Europe yields comparatively little, Germany and Spain furnishing yearly somewhat less than Canada. In Asia, Japanese mines yield about $2,500,000 worth per annum; Africa supplies practically nothing; while in South America the famous mines of Bolivia and Peru, which poured out their riches in such profusion during the early days of the Spanish conquest, in 1907 yielded only about $8,000,000 altogether, or very little more than the united production of Ontario and British Columbia.

Markets for Silver

But if the countries of the East produce little silver, they purchase large quantities, being indeed the dominating factor in the market. The course of silver prices was for some three or four years previous to the later months of 1907—or practically ever since the beginning of the Cobalt production—almost constantly upward, reaching nearly 70⅝ cents per ounce early in the year, then receding a little, but rising again to over 68 cents in August. The autumn months saw a rapid decline, and the year closed with an average price for December of 54.565 cents. The maintenance of the higher level during the earlier part of the year was doubtless due in large measure to the steady demand prevailing for some time from India, both for coinage and trade purposes, but, early in October, the partial failure of the rains in that country made it apparent that only a moderately good crop could be hoped for. The Indian bazaars then instead of buying, began to sell silver, and as the London market was heavily stocked and other demands were light, the pressure to realize brought about a fall in price. The downward tendency was accentuated by the high rates of interest current during the closing portion of the year, the Bank of England rate being 7 per cent. from early in November until 31st December, a point that had not been touched since 1870.

The important influence of India on the silver market may be realized when it is stated that the imports into that country in 1906 amounted to $73,898,225 worth, and in 1907 to 85,878,884 ounces, worth about $50,000,000. A large part of the silver bought by India is hoarded by the people of that country, when prosperity prevails, chiefly in the form of ornaments and objects of native manufacture. In times of scarcity or famine, some of this silver is thrown upon the market, though the hoarding process which has been going on for centuries, never wholly ceases. Thus the hunger of the ryots of Bengal may close a silver mine, or many silver mines, in America. China, too, is a great user of silver, largely as currency, both in the form of sycee, or native bullion, (about 98 per cent. fine), and Mexican dollars, which are current all over the empire, and also in Malaysia. A considerable part of India's requirements in 1907 was supplied by China, much of the silver poured into Manchuria during the Russo-Japanese war finding its way to treaty ports for export.

The prosperity of the Cobalt mining camp, however, much less its existence, does not depend upon a high price for silver. The ores of Cobalt are so much richer than the average that many of the mines could continue to produce silver even in the face of a still further lowering of its value. Yet it goes without saying that a restoration of better prices for silver would be welcome in Cobalt, where the ores are valuable almost wholly for their silver contents, in this respect differing from many other sources of supply, in which silver is a by-product of lead, copper or gold. Taking the world as a whole, doubtless most of the silver is obtained from mines which are operated in the first instance for other metals. An increase in the price of lead or copper stimulating the production of these metals, leads to a larger yield of silver, with the consequent possibility of lower prices for the latter.

The Mines of Cobalt

The output of silver in Ontario last year was 10,028,259 ounces, having a value according to returns received from the mining companies of $6,157,871. Compared with 1906, when the production was 5,433,984 ounces, worth $3,689,286, the gain in quantity was 85 per cent., but owing to the fall in price, there was an increase in value of only 68 per cent. The shipments of ore amounted to 14,809 tons, so that on the average the ore shipped out contained 677 ounces of silver per ton, and had a value of $416. The average value of the ore taken out in 1907 was considerably less than in 1906; indeed, in this particular, as was to be expected, there has been a progressive decline since the opening of the mines. The following figures giving the average contents of the ore shipped each year show this to be the case:

	Ounces.
1904	1,309
1905	1,143
1906	1,013
1907	677

It does not, however, follow that the ores are becoming poorer. In the early days of the camp only the rich ore containing native silver in nuggets and plates was sent out, but in 1906 and to a still greater extent last year, ore containing as low as 150 ounces per ton or less was freely marketed. Probably as much high grade ore was shipped in 1907 as in any previous year, but there was also sold a greater quantity of screenings and other material having a much less average value. A considerable tonnage of this low grade product was shipped to the American Smelting and Refining Company's works at Denver, Colorado, where it has been found suitable for mixing with certain of the ores of the Western States.

The producing mines of the Cobalt camp in 1907 were 28 in number, and are here given in the order of the value of their production: Nipissing, O'Brien, Coniagas, La Rose (including Lawson), Kerr Lake, McKinley-Darragh-Savage, Buffalo, Trethewey, Temiscamingue, Temiscaming and Hudson Bay, Drummond, Right-of-Way, Foster, Cobalt Silver Queen, Nova Scotia, Green-Meehan, City of Cobalt, King Edward, Cobalt Townsite, Silver Leaf, University, Standard Cobalt (Cobalt Central), Colonial, Nancy Helen, Temiscaming Cobalt, Red Rock, Imperial Cobalt. The shipping mines in 1904 were four in number; in 1905 sixteen; in 1906 seventeen, and in 1907 twenty-eight. Since the beginning of 1908 several others have been added to the list, among them the Crown Reserve, Casey Cobalt and Provincial mine. In point of tonnage, there has been a rapid increase year by year, as is shown by the following table, which also summarizes other features of interest. The figures are for the Cobalt camp only, and do not include small quantities of silver produced by the mines of the Lake Superior region, or obtained from the Sudbury nickel-copper mattes:

Table VI.—Silver Production Cobalt Mines 1904 to 1907

Year.	Producing mines.	Ore shipped.	Silver contents.	Value silver.	Average silver contents per ton.	Average silver value per ton.
	No.	Tons.	Ounces.	$	Ounces.	$
1904	4	158	206,875	111,887	1,309	708.14
1905	16	2,144	2,451,356	1,360,503	1,143	634.56
1906	17	5,335	5,401,766	3,667,551	1,013	687.07
1907	28	14,788	10,023,311	6,155,391	677	416.24
Total		22,425	18,083,308	11,295,332	806	503.69

The Labor Question at Cobalt

The production of the Cobalt mines in 1907 was probably less than it would have been but for the labor troubles which broke out in July. The demands of the men for higher wages not having been granted by the mining companies, a strike was

declared by the miner's union, a branch of the Western Federation of Miners. Feeling ran high for some time, but there was little in the way of violence, this freedom from crime being no doubt in part due to that provision of the mining law enacted in 1900, which provided that no new licenses for the sale of intoxicating liquor should be issued within six miles of a producing mine. As the discoveries at Cobalt had not then been made and there was no settlement there in 1900, the camp has developed to its present stage with an entire absence of the legalized sale of liquor, and up to the present time Cobalt, though with a full share of the adventurous and boisterous spirits which a "booming" camp invariably attracts, has had a record for the observance of law and order surpassed by scarcely any rural part of Ontario. There have been no murders, and few assaults, and even amid the stress and strain of a bitter strike, practically no violence was done on either side. The agitation in favor of higher wages was not successful, for though a few mines granted the union scale of pay and hours, the majority continued at work on the old terms.

Table I shows that 2,038 men were employed in the Cobalt mines in 1907. An organization, known as the Mines Free Employment Bureau, acts as middleman in supplying labor to the mines. Men out of employment register at the Bureau's office, stating the kind of work they want, their qualifications, experience, etc. Mine managers desiring hands apply to the Bureau for machine men, muckers, mechanics, etc., and are furnished with the help required, taking the men in the order of their registration. The system has been found to answer well, and to be a great convenience both to managers and to men. Mr. W. R. Mackan, manager of the Bureau, in response to an enquiry furnished under date of 16th February, 1908, a statement showing the number of men employed in the mines of Cobalt, and the capacity in which they were severally employed. The list is here given, as showing the labor requirements of the camp and also the high stage of development already reached in the subdivision of labor in the mines: Surface foremen 23; mine captains 29; shift bosses 51; head carpenters 15; carpenters 76; carpenters' helpers 18; master mechanics 17; mechanics 20; pipe-fitters 24; pipe-fitters' helpers 13; blacksmiths 57; blacksmiths' helpers 52; engineers 60; firemen 49; head ore sorters 18; ore sorters 107; hammermen 36; teamsters 57; hoistmen 58; bucket tenders 67; timbermen 35; timbermen's helpers 10; machine men 203; machine men's helpers 165; muckers 149; trackmen 11; surface laborers 114; other employees 180; total 1,714. Mr. Mackan adds that some of the smaller mines were closed down at the time of writing, and that in his opinion it would be fair to add about 300 men to this number, which would take in men engaged in prospecting at that date, and also those who were temporarily out of work.

The growth of the Cobalt camp as a field for the employment of labor is shown by the following figures:

Year.	Number of men employed.		Wages paid.
	Above ground.	Under ground.	
			$
1904.....	29	28	12,300
1905.....	289	186	191,582
1906.....	471	586	581,253
1907.....	1,201	826	1,525,019

In his interesting report to the Temiskaming and Northern Ontario Railway Commission for the year 1907, Mr. Arthur A. Cole, the Commission's mining engineer, gives the following particulars regarding the power requirement and equipment of the Cobalt mines:

Horse power boiler capacity of the Cobalt camp at end of

Year	H. P.
1904.....	Zero
1905.....	150
1906.....	3,406
1907.....	7,918

The mines of the district now have 74 steam plants and two gas producer plants, and in connection with these are 51 compressor plants, as compared with 20 at the end of 1906. A favorable result of the installation of this machinery is that more development than formerly is being done per ton of ore shipped and there is to-day more ore blocked out than there was a year ago.

A somewhat unexpected feature in the operations of the mines is the fact that in this camp, situated in a dense forest, the prevailing fuel for boiler consumption is coal. The use of wood has been practically abandoned. The reasons for this are the absence of hard wood,—the only available timber for fuel purposes being the smaller conifers such as tamarack, balsam and jack pine, which when dry give a hot fire but do not last long in the furnace;—the high cost of cutting and hauling wood; and the superior convenience of coal, which is brought in in carlots, and in a number of mines, switched direct to the power house or fuel bins.

Concentrating Low-grade Ores

The utilization of the low grade ores of the Cobalt silver mines is now assuming much importance. Many of the mines have accumulated dumps of considerable magnitude, the silver contents of which are far from negligible. To meet the situation thus arising, four of the mining companies have installed concentration plants, all of which were either in operation or on the point of completion at the end of the year. Following are the companies which have installed milling plants: The Buffalo Mines Company, Limited; Standard Cobalt Mines, Limited, at the Cobalt Central mine; Coniagas Mines, Limited; and McKinley-Darragh-Savage Mines of Cobalt, Limited.

Two custom concentrating plants are also in course of construction, belonging respectively to Muggley Concentrators, Limited, and Cobalt Concentrators, Limited.

The concentration in all cases is by water, except in that of the Cobalt Concentrators, where a pneumatic process is employed.

In addition to the foregoing local plants, several reduction works for the further treatment of the Cobalt ores are under way in various parts of the Province. The Orford Copper Company's plant at Copper Cliff has been in operation since 1906. It treated 2,266 tons of ore last year, most of which was high grade material. The Deloro Smelting and Reduction Company which purchased the gold-arsenic reduction works at Deloro, Hastings county, and equipped them for treating the ores of Cobalt, were in the market for ore about the end of the year, and have been operating since early in 1908, principally on ore from the O'Brien mine, the owners of which are also interested in the reduction plant. This company has been successful in producing bar silver up to .998 fineness which it markets in London, England, but so far has not made any attempt to separate the cobalt and nickel, which are retained in the residues. At Thorold the Coniagas Reduction Company expect to have their plant in operation early in the summer of 1908. Their purpose is not only to recover the silver, but also to manufacture cobalt and nickel oxides, and white arsenic. Large holders of shares in Coniagas Mines, Limited, are connected with this company. The smelters at Trout Lake and Sturgeon Falls have not yet begun to treat ore.

Ore Purchasing Concerns

The principal purchasers of ore in 1907 were the American Smelting and Refining Company, and the Orford Copper Company. All of the ore bought by the latter was sent to Copper Cliff, Ont., for treatment, while the former shipped most of its tonnage to its works at Perth Amboy, New Jersey, but a proportion also of low grade ore to its plant at Denver, Colorado. The purchasing tariffs of the several buying companies may be summarized as follows:

American Smelting and Refining Company: For ores under 1,500 ounces silver per ton, pay for 93 per cent. silver contents at New York price 30 days after agreement of assays, less working charge of $9 per ton plus one-half cent per ton for each ounce of

silver contained. If arsenic in excess of 5 per cent., working charge increased 25 cents per ton for each per cent. of arsenic so in excess. Seven cents per ton added to working charge for each per cent. of insoluble matter contained in excess of iron.

For ores 1,500 ounces silver per ton and over: Pay for all silver recovered at New York quotations on date of production of bars, and for 98 per cent. of silver in all by-products such as slags, test bottoms, etc., 30 days after agreement of assays less a working charge of $125 per ton plus one cent per ounce of silver paid for.

The freight on ore from Cobalt to Perth Amboy is $10.20 per ton, and on shipments to Denver a reduction in working charge is made to equalize freight.

Orford Copper Company: Pay for 94 per cent. of silver per ton of ore containing 4,000 ounces and over, 93 per cent. for ore containing 1,200 ounces and over, 92 per cent. 800 ounces and over, 90 per cent. 500 ounces and over, 85 per cent. 300 ounces and over, 80 per cent. 150 ounces and over; also for cobalt $30 per ton of ore containing 12 per cent. cobalt or over, $20 per ton containing 8 per cent. or over, $10 per ton containing 6 per cent. or over. Payment made of 50 per cent. value silver and cobalt at New York price 45 days after sampling completed, remaining 50 per cent. 45 days later.

Freight on ore from Cobalt to Copper Cliff is $5.20 per ton.

Deloro Smelting and Reduction Company: Pay for 95 per cent. of silver per ton assaying 2,000 ounces and over, 94 per cent. 1,000 to 2,000 ounces, 93 per cent. 800 to 1,000 ounces, 91 per cent. 500 to 800 ounces, 90 per cent. 200 to 500 ounces, 85 per cent. 100 to 200 ounces, at New York quotations 30 days after agreement of assays; 1 cent per pound for arsenic in ore containing 10 to 30 per cent., 1½ cents per pound in ore containing 30 per cent. arsenic and over; also $10 per ton of ore containing 6 to 10 per cent. cobalt, and $20 per ton containing 10 per cent. or over.

Freight from Cobalt to Marmora (station for Deloro), $7 per ton.

The Balbach Smelting and Refining Company of Newark, New Jersey, United States Smelting, Refining and Mining Company of Chrome, New Jersey, and Pennsylvania Smelting Company of Carnegie, Pennsylvania, also bought consignments of ore during the year.

Of the ore shipments from the camp in 1907, 81.47 per cent. went to the United States, and 17.40 to Canadian reduction plants (practically all to Copper Cliff). The remainder, 1.13 per cent., was silver-free cobalt ore which was shipped to England.

Shareholders in Cobalt mining companies have up to 31st December, 1907, realized $3,847,344.19 in dividends and bonuses. Of this $1,954,450 was paid in 1906 and $1,892,894.19 in 1907. Details of payments in 1906 were given in the Sixteenth Report of the Bureau of Mines, Part I, page 13, and similar particulars regarding the dividends of 1907 will be found in Part II of the same Report, so that it is unnecessary to repeat them here. These sums do not include the returns made to the owners of La Rose and Drummond mines, which are close corporations, or the profits realized by the owners of the O'Brien mine, which would bring the whole amount up to about five millions of dollars.

Cobalt: Nickel: Arsenic

The constituents of the Cobalt ores other than silver do not bulk largely in the figures of value. Nothing is realized by mine owners on the nickel contents, very little for the arsenic, and not much for the cobalt. When the last-named element comprises less than 6 per cent. by weight of the ore shipments, it is disregarded in the smelter returns, if in excess it is paid for at the rate of $10 to $30 per ton of ore, according to the proportion of cobalt. Only one company purchasing Cobalt ores, the Deloro Mining and Reduction Company, pays anything for arsenic. If over 10 per cent. and under 30 per cent. by weight, this company allows one cent per pound for the arsenic contents; if over 30 per cent., one and a half cents per pound.

The mining companies, receiving so little for these ingredients, are at no pains to ascertain how much their shipments contain, and as in many cases no assay is made or reported for nickel, cobalt or arsenic, there is no means of ascertaining exactly what quantities of these substances are shipped out of the Cobalt district. In the last Report of the Bureau the percentages adopted for tabulation purposes were 6 per cent. for cobalt, 3 per cent. for nickel, and 27 per cent. for arsenic. The low grade ores, such as comprised a considerable proportion of the shipments of 1907, contain not only less silver, but less cobalt, nickel and arsenic than the ores of higher grade, hence the lowering of the average silver contents implies also a lowering of the other mineral constituents. It is not possible to estimate precisely the extent to which these substances have fallen, but it is probable the level for 1907 would be found at not far from 5 per cent. for cobalt, 2½ per cent. for nickel, and 20 per cent for arsenic, and these proportions have been assumed in compiling the statistics of last year.

The production of the Cobalt mines, including all the constituents of value, since they were opened, is shown in the following table:

Table VII.—Total Production Cobalt Mines 1904 to 1907

Year.	Ore shipped.	Nickel.		Cobalt.		Arsenic.		Silver.		Total Value.
	Tons.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Ounces.	Value.	
			$		$		$		$	$
1904	158	14	3,467	16	19,960	72	903	206,875	111,887	136,217
1905	2,144	75	10,000	118	100,000	549	2,693	2,451,356	1,360 503	1,473,196
1906	5,335	160	.....	321	80,704	1,440	15,858	5,401,766	3,667,551	3,764,113
1907	14,788	370	1,174	739	104,426	2,958	40,104	10,023,311	6,155,391	6,301,095
Total	22,425	619	14,641	1,194	305,090	5,019	59,558	18,083,308	11,295,332	11,674,621

The overwhelming proportion of silver as compared with the other constituents of the Cobalt ores is well shown by the above table. The returns from silver were 97 per cent. of the whole.

The total output of silver in 1907 was 10,028,259 ounces, a small production being reported from one of the mines in the Port Arthur region. The rise and progress of the Cobalt camp has revived a certain interest in the latter area, once the scene of much activity, but as yet there has been no resumption of production on any considerable scale.

Montreal River Silver Field

The discovery of silver-cobalt-nickel ores on the Montreal river in and near the township of James drew a large number of prospectors to that region last year. A considerable number of such finds were made, and there seems good reason to believe that the ore exists in quantity and quality sufficient to pay for working. Access to the district is not difficult, the route by canoe up the Montreal river from Latchford station on the Temiskaming and Northern Ontario railway being a good one with few portages. There is also an overland route from Charlton, the terminus of a spur of the same railway, and should the promise of richness which the district now holds out be realized, an extension of this spur to the Montreal river would afford the necessary rail connection. At present machinery and supplies are somewhat expensive to transport, especially as compared with the early days of Cobalt, through which camp the railway ran from the start, and to some extent this is retarding the progress of the field. Near Anvil lake, south of James township, the White brothers discovered rich ore in 1906, and it is understood their claims have been sold for a good figure this spring (1908). Round Silver and Hubert lakes a number of promising claims have been staked out showing native silver and cobalt. Further west on the east branch

of the Montreal river, prospectors last year found good ore of similar character on and in the neighborhood of Bloom lake, and this region is likely to attract considerable attention during the coming season. With commendable enterprise the pioneer prospectors of Bloom lake have built by their own labor a road about 15 miles long leading from Elk lake on the Montreal river to Bloom lake. A large part of this whole region is in the Temagami Forest Reserve, prospecting and mining in which are regulated by the Government with the view of protecting and preserving the timber. Searching for minerals can only be carried on by authority of a permit issued by the Department of Lands, Forests and Mines, and the Mining Act forbids the sale of lands within the Reserve. A lease, however, of a mining claim can be granted renewable for ten-year periods, which enables the minerals to be worked.

The results of a geological exploration carried on last year, in the Temagami Reserve and Montreal River district, under the direction of the Provincial Geologist, are presented in the Sixteenth Report, Part II, where fuller details are given. The colored map accompanying that Report has already been published, so that prospectors going into the district may take it into the field with them next spring. A black and white map of the Bloom lake region has also been issued, showing the route into the region, the claims which have been surveyed, etc. This also, it is hoped, will be of service to prospectors.

Silver Finds South of Lorrain

The newest silver camp in the Province lies south of the township of Lorrain, which occupies a considerable portion of the west shore of lake Temiskaming. In the summer of 1907 a good vein of cobalt ore unaccompanied by silver was found on a claim about three miles west of the lake, since surveyed as H R 16, owned by the Haileybury Silver Mining Company, while on H R 19 (Keeley or Jowsey claim) near by, a considerable quantity of wire silver was struck along with cobalt bloom. Some 10 or 11 tons of this wire silver ore was bagged early in 1908. Owing to the thick covering of snow which effectually obscures the surface of most of northern Ontario in the winter time, it has hitherto been impracticable to satisfactorily determine the geology of this region, but in March of the present year, while the snow was still on the ground, Mr. C. W. Knight, Assistant Provincial Geologist, made a brief examination of the productive area, which seemed to show that it was in proximity to a diabase contact with prevailing country rock of Keewatin age. One or two claims nearer lake Temiskaming have been reported as showing native silver in small quantity. It is proposed to study the district in greater detail during the approaching season, and to issue a geological map and report as soon as possible. Winter prospecting, or at any rate winter staking, has been active in this region as a result of the discoveries and already stakes have been planted covering the territory as far south as the mouth of the Montreal and Metabitchewan rivers.

Provincial Mine

A memorandum showing the progress of work at the Government Provincial mine on the Gillies limit up to the end of 1907 is furnished by Mr. E. T. Corkill, who has been associated with Prof. Miller in the management of the mine:

When work was commenced by the Bureau of Mines on the Gillies limit in 1906, there were rumors of very rich silver finds having been made during the previous year by prospectors, who had gone on the limit without permit. All such reported finds where any work has been done were examined by trenching, etc., but no veins of value were uncovered. In some cases prospectors who claimed to know of solid veins of silver on the limit showed their finds to us on the understanding that they would receive $150 an inch in width for veins running over 500 ounces in silver. All these parties were unable to show us veins of any value, in fact anything that was shown us were mere cracks in the rock. Several veins were found by us in trenching, but the most promising was discovered near the northwesterly boundary under 4 or 5 feet of earth on July 19th, 1906.

During the year 1906 very little actual mining work was done. During the months of July to October, 1906, about twenty men were employed continuously, trenching about 18,000 feet. Several test pits were put down and three small shafts were sunk 10, 30, and 55 feet respectively. In the 55-foot shaft to the west of the railway 45 feet of drifting and cross-cutting was done on the 55-foot level.

In addition to actual prospecting the northern portion of the limit was surveyed and mapped in 1906, and the main shaft on the vein found adjoining the Nipissing property was begun.

Owing to the failure of the machinery companies to deliver the machinery according to contract, and the labor difficulties in the Cobalt camp in 1907, very little work was done at the mine between April and September of that year.

Owing, too, to construction work on the Kerr Lake branch of the T. & N. O. railway, which passed within 200 feet of our mine buildings, the danger from blasts on the railway retarded operations at the mine greatly, as these could only be carried on with jeopardy to the lives of the workmen. The work at the mine up to the end of 1907 shows the following:

The shaft has been sunk 140 feet with levels at 65 and 125 feet respectively. The shaft is timbered for its entire depth with square sets and the hoist way provided with guides for cage.

On the first level 450 feet of drifting has been done and 70 feet of cross-cutting. A raise has also been put through to the surface 50 feet east of the shaft on the vein, and timbers put in and stoping begun for 90 feet along the vein.

On the second level at 125 feet in depth 25 feet of drifting and cross-cutting has been done.

At the mine, buildings have been erected consisting of boiler house 32 × 50 feet, bunk house, two stories, 20 × 50 feet, dining room, office, ore house, blacksmith shop and shaft house.

The machinery installed consists of a 100-h.p. return tubular Jenckes boiler, the high pressure half of a Rand air compressor developing 500 cubic feet of free air per minute. The concrete foundation for the complete compressor has been put in, and also a 7 × 10-inch Jenckes hoist. In the mine a Worthington pump has been placed on the first level, and a Cameron sinking pump on the second. Five air drills have been purchased and three are kept continuously in operation. In addition to these the mine is thoroughly equipped with piping, tracks, steel for drills, air hose, etc.

At the present time the ore is being broken down in the stope on the first level, but very little can be taken out until the stope has been carried through to the surface when the rock and ore will be drawn from the stope and ore picked out and sacked. About 60 feet more drifting will be necessary on the second level before the vein is cut.

About 25 men are at present employed.

Nickel

There were 10,972 tons of nickel produced in Ontario in 1907, practically the same quantity as in 1906. By far the greater portion of the output was from the nickel-copper mines of the Sudbury district, the only other source of the metal being the mines of Cobalt, from which the production is estimated at 370 tons.

The Canadian Copper Company remains the largest operator in the nickel field. With large deposits of high-grade ore, an extensive and well equipped plant both for mining and smelting, and ample means at its command, this company occupies a very strong position as a producer of nickel. The quantity of ore raised by the Canadian Copper Company was 303,256 tons, of which 238,948 tons were from the Creighton mine, and 61,081 tons from the Crean Hill mine, which began production last year. The remainder came from the old No. 2 mine at Copper Cliff. The Mond Nickel Company mined 48,660 tons of ore wholly from Victoria mine No. 1. The quantity of Bessemer matte produced by these companies was 22,041 tons, the average contents of which were 48 per cent. nickel and 32 per cent. copper. Both plants were in operation during the whole of the year, the number of employees being 1,660, and the wages paid out $1,278,694. The Mond Company is developing a water power for operating its mine and works at Wabageshik falls on the Vermilion river in the township of Lorne. The nickel-copper mines of Sudbury have given Ontario first place among the nickel producing countries of the world, far surpassing the only other source of supply, the island of New Caledonia. The garnierite or nickel silicate of New Caledonia is a very different mineral from the pyrrhotite of Sudbury, in which the

nickel occurs as a sulphide, principally pentlandite, and the treatment of the two classes of ore is very unlike. The roast yards at Copper Cliff or Victoria Mines show huge heaps of burning ore slowly exhaling tons of sulphur in the most acrid of fumes, withering every green blade within their influence. In smelting the New Caledonia ore, on the other hand, it is necessary to add sulphur. Along with the nickel in the Sudbury ores is found a nearly equivalent proportion of copper, while in the New Caledonia mineral nickel is the sole element of value. The ore is exported as such from New Caledonia, but although the Canadian ore is smelted to a Bessemer matte at the mines, the final processes of refining and separation take place abroad, the Canadian Copper Company's refinery being in New Jersey, and the Mond Nickel Company's in Wales.

Table VIII summarizes the progress of nickel-copper mining in Ontario for the last five years:

Table VIII.—Nickel-Copper Mining 1903 to 1907

Schedule.		1903	1904	1905	1906	1907
Ore raised	tons	152,940	203,388	284,090	343,814	351,916
Ore smelted	"	220,937	102,844	257,745	340,059	359,076
Ordinary matte produced	"	30,416	19,123	.....	.....	.....
High grade matte produced	"	14,419	6,926	(a) 17,388	(a) 20,364	(a) 22,041
Nickel contents	"	6,998	4,743	9,503	10,776	10,602
Copper contents	"	4,005	2,163	4,525	5,260	7,005
Value of Nickel	$	2,499,068	1,516,747	3,354,934	3,839,419	2,270,442
Value of Copper	"	583,646	297,126	688,993	806,413	1,020,913
Wages paid	"	746,147	570,901	833,822	1,117,420	1,278,694
Men employed	No.	1,277	1,063	1,176	1 117	1,660

(a) Bessemer matte.

The reduced valuation placed on the nickel contents of the matte by the mining companies as compared with 1906, already spoken of, is very noticeable in the above figures. Nickel in the matte a year ago was worth according to these returns 17.8 cents per pound, whie in 1907 it was worth only 10.7 cents per pound, notwithstanding that the price of the refined metal, according to published quotations was quite as high in 1907 as in 1906.

In roasting the ore and as fuel for other purposes 28,435 cords of wood valued at $77,366, or $2.72 per cord, were consumed last year, also 63,899 tons of coke worth $462,204 in smelting the ore into matte. Without allowing for the loss of metallic contents in roasting and smelting, the ores converted into Bessemer matte contained an average of 2.95 per cent. of nickel and 1.95 per cent. of copper, as compared with 3.16 per cent. of nickel and 1.54 per cent. of copper in 1906. This shows a reduction of .21 per cent. of the former, but an increase of .41 per cent. of the latter metal.

Copper

Most of the copper produced in this Province comes from the nickel-copper mines of Sudbury, but a varying quantity is obtained year by year from the non-nickeliferous copper deposits in other districts, principally on the north shore of lake Huron. The heavy fall in the price of copper which ruled for electrolytic 25.070 cents per pound in the New York market in March, but which dropped to 13.277 cents per pound in December—a decline of 47 per cent.—had a tendency to discourage the production of the metal. The quantity of ore raised by four copper sulphide mines in 1907 was 9,575 tons, containing about 300 tons of copper, or an average of a little over 3 per cent. These mines were the Bruce mines, owned by the Copper Mining and Smelting Company of Ontario, the Hermina, the Tip-top, and the Cobden Copper Mining Company's mine in the township of that name. The Superior and Bruce mines together produced 370 tons of concentrates containing about 72 tons of copper, and valued at $24,598.

Following are the figures of production from the copper sulphide mines:

Ore raised	tons	9,575
Estimated copper in do	"	300
Concentrates produced	"	370
Estimated copper in do	"	72
Value of do	$	24,598
Workmen employed	No.	164
Wages paid	$	105,333

Iron Ore

The quantity of ore raised and shipped from the iron mines of the Province during the year 1907 was 205,295 tons, valued at $482,532, as against 128,049 tons worth $301,032 in 1906. The output was composed of 157,715 tons of hematite and 47,580 tons of magnetite. The hematite was the product entirely of the Helen mine at Michipicoten, while the magnetite came from the mines of the Mineral Range Iron Mining Company at Bessemer, Hastings county, the Atikokan Iron Company at Atikokan, the Wilbur Iron Ore Company at Wilbur, Lanark county, and the Canada Iron Furnace Company at Radnor, Renfrew county. All of these mines, except the Wilbur, are operated by or in connection with companies producing pig iron. The Helen ore is exported mainly to the United States, where in effect it is exchanged for ore suitable for the manufacture of steel rails by the Algoma Steel Company at Sault Ste. Marie; the produce of the Bessemer mines, now being operated by the Canada Iron Furnace Company, is smelted in the company's blast furnace at Midland, while the ore from the Radnor mine goes to the same company's furnace in Quebec; the Atikokan magnetite after roasting is smelted by the Atikokan Iron Company at Port Arthur; and the product of the Wilbur mine, which is of Bessemer quality, is shipped to Sault Ste. Marie for use in making pig iron for steel rails.

The Moose mountain deposit of magnetite has as yet made no shipments of ore, but the completion of the branch of the Canadian Northern railway into the mine and of the docks and ore pockets at the Key on French river will allow of the product being placed upon the market. A large bed of bog ore is reported from near Niblock station on the main line of the Canadian Pacific railway west of Port Arthur; good samples of magnetite have been brought out from the neighborhood of Emerald lake in the Temagami Forest Reserve, and a considerable body of ore is said to have been found some distance north of Savant lake about twelve miles from the line of the National Transcontinental railway. None of these deposits however have in any way been proven. On the old Blairton mine property in the township of Belmont, Peterborough county, diamond drilling is said to have disclosed a considerable body of hematite.

Messrs. Coleman and Moore, on behalf of the Bureau of Mines, continued their exploration of the Iron ranges east of lake Nipigon, and in the present report give an account of their work. There are still considerable stretches of Iron formation in that district to be examined, and it is probable these gentlemen will return to the same field during the season of 1908.

For a full account of the iron industry of Ontario, and its productive capacity both in iron ore and pig iron and steel, reference should be had to the article in the present volume on the subject by Mr. George C. Mackenzie, who has had a wide and practical experience in the iron business.

Table IX gives particulars of the production of iron ore for the five years 1903 to 1907 inclusive:

Table IX.—Iron Ore Production 1903 to 1907

Schedule.	1903.	1904.	1905.	1906.	1907.
Ore shipped ..... tons	208,154	53,253	211,597	128,049	205,295
Value of ore shipped ..... $	450,099	108,068	227,909	301,032	482,532
Men employed ..... No.	324	191	278	204	276
Wages paid ..... $	166,457	84,673	164,153	125,391	192,063

Pig Iron and Steel

There were seven blast furnaces in operation in 1907, viz., two owned by the Algoma Steel Company at Sault Ste. Marie, two by the Hamilton Steel and Iron Company at Hamilton, and one each by the Canada Iron Furnace Company, the Atikokan Iron Company and the Deseronto Iron Company at Midland, Port Arthur and Deseronto respectively. The last named, however, was in blast for a short period only, while one furnace at Sault Ste. Marie and one at Hamilton were blown in during the year and did not run for the whole twelve months. The output of the furnaces was a total of 286,216 tons of pig iron valued at $4,716,857, as compared with 275,558 tons, worth $4,554,247 in 1906. The production of steel which comprised castings and ingots by the Hamilton Steel and Iron Company, and steel rails by the Algoma Steel Company, amounted to 237,855 tons, valued at $4,168,127.

At Welland the manufacture of steel by the basic open hearth process has been begun by the Ontario Iron and Steel Company. This company will not operate a blast furnace, but will purchase its supplies of pig in the open market.

The Electro-Metals Company has also located works at Welland for the manufacture of ferro compounds, and the production of pig iron by the electric process. The plant went into partial operation in December, 1907, the product being ferro-silicon, quartz for which was brought from the feldspar quarries on the Kingston and Pembroke railway near Verona. It is proposed also to make ferro-chrome and ferro-tungsten.

Particulars of the operation of the blast furnaces and steel works for the year are as follows:

Ontario ore smelted	tons	120,156
Foreign " "	"	388,727
Scale and mill cinder	"	22,806
Limestone for flux	"	171,057
Coke for fuel	"	326,937
Value of do	$	1,748,090
Charcoal for fuel	bush.	1,849
Value of do	$	221
Pig iron product	tons	286,216
Value of do	$	4,716,857
Steel product	tons	237,855
Value of do	$	4,168,127
Workmen employed	No.	1,212
Wages paid	$	805,681

The proportion of Ontario ore used in making pig iron was 23.6 per cent. in 1907, as against 20 per cent. in 1906. With the easy water carriage provided by the great lakes which form the southern boundary of Ontario, it will probably continue to be more advantageous to import iron ore for use at given points on or contiguous to the shores of these lakes, than to bring it by rail for great distances inland, especially ores required for given mixtures or for special grades of pig. For the same reason, it may often be more profitable to export ore to the United States from points not well situated as regards blast furnaces than to pay freight upon it to smelters in Ontario. Thus, it is likely there will always be a movement of ore to and from both sides of the boundary line; nevertheless it is matter for regret that after 12 years' active and constantly growing manufacture of pig iron since the revival of the industry in 1896, less than one-quarter of the ore charged into the furnaces of Ontario is of domestic origin. The scarcity of hematite in that part of the Province south and east of the Georgian bay, in which the majority of the furnaces have hitherto been situated, doubtless accounts for much of the imports from the United States, since furnace men in Ontario have modelled their practice upon methods in use south of the line, where the manufacture of pig iron and steel is based upon the existence of an abundant supply of first rate hematite and has developed accordingly.

The situation, however, shows signs of improvement. The opening up of bodies of good magnetic ore of considerable size, some of it of Bessemer quality, is placing supplies of excellent raw material at the disposal of smelting establishments which should tend to free them from dependence upon foreign sources. The market for manufactures of iron and steel which the settlement of northern Ontario and Northwest Canada will create affords conditions for the building up in Ontario of a great industry

in the production of these staples which could hardly be surpassed, provided the necessary supplies of ore exist here. The known deposits have been materially added to during recent years, and as the exploration of the great stretches of iron-bearing rocks in northern Ontario proceeds, they can scarcely fail to be still further multiplied.

Statistics regarding the manufacture of pig iron and steel during the five years beginning with 1903 are given in the following table:

Table X.—Production Iron and Steel 1903 to 1907

Schedule.	1903.	1904.	1905.	1906.	1907.
Ontario ore smelted ..... tons	48,092	50,423	61,960	101,569	120,156
Foreign ore smelted ..... "	103,137	173,182	383,459	396,463	388,727
Limestone for flux ..... "	49,426	61,566	121,052	153,702	171,037
Coke ..... "	96,540	135,108	262,415	304,676	326,937
Charcoal ..... bush	932,630	1,821,270	3,387,869	811,926	1,849
Pig iron ..... tons	87,004	127,845	256,704	275,558	286,216
Value of pig iron ..... $	1,491,696	1,811,664	3,909,527	4,554,247	4,716,857
Steel ..... tons	15,229	51,002	138,387	167,026	237,855
Value of steel ..... $	304,580	1,188,349	3,321,884	4,202,278	4,168,127

These figures show that the quantity of pig iron made in 1907 was 275 per cent. more than in 1903, and other items of production have increased correspondingly.

Materials of Construction

The chief material used in Ontario for houses and other structures for occupation is brick, clay for the manufacture of which is found widely distributed throughout the Province, especially in the older and less rocky portions. The output of the brick yards last year in common and pressed brick had a value of $2,758,666, as compared with $2,494,795 in 1906. Prices of common brick rose considerably during the year, being on an average $7.70 per thousand as against $7.19 in 1906.

That there has been a steady advance in the prices of brick for a number of years is clearly seen from the following figures, showing the average price of common bricks per thousand as returned to the Bureau of Mines. There can be no doubt that the increase has materially contributed to higher costs in building operations. Advancing wages, and more expensive fuel and machinery have in this as in many other branches of industry forced the value of finished products to a higher—probably a permanently higher—level.

Year.	Price per M.	Year.	Price per M.
1901	$5 73	1905	$7.75
1902	6.41	1906	7.19
1903	6.78	1907	7.70
1904	7.15		

The statistics indicate a larger use of pressed brick than formerly, the production in 1907 having a value of $646,683, as against $337,795 in 1906. To some extent this better quality of brick has replaced the commoner variety. There is little doubt, too, that on the whole the brick made now are superior both in appearance and durability to those made years ago, greater skill and care being shown in their manufacture.

Other products of the kiln were paving brick, drain tile and sewer pipe, the aggregate value of which in 1907 was considerably in excess of 1906.

Product.	1906	1907
	$	$
Paving brick	45,000	73,270
Drain tile	252,500	250,122
Sewer pipe	279,620	435,088
Total	$577,120	$758,480

The production of building and crushed stone in 1907 had a value of $675,000, as against $660,000 in 1906.

Of lime the output was 2,650,000 bushels, valued at $418,700, as compared with 2,885,000 bushels worth $496,785 in 1906. The average value per bushel was 15.8 cents.

Portland Cement

Portland cement is now one of the most important of construction materials, and its manufacture is increasing in this Province with very considerable rapidity. Last year there were produced in Ontario 1,853,692 barrels worth $2,777,478, compared with 1,598,815 barrels worth $2,381,014 in 1906. The average price per barrel at the factory was $1.50, an increase of about 2 cents over 1906, when the price averaged $1.48 per barrel. The following Portland cement plants were in operation during the year: Raven Lake; Western Ontario, Atwood; Owen Sound, Shallow Lake; Belleville; Lakefield; Canadian, Marlbank; Sun, Owen Sound; National, Durham; Grey and Bruce, Owen Sound; Imperial, Owen Sound; Ontario, Blue Lake; Hanover. A trial run was made by the Superior Portland Cement Company, Orangeville, towards the close of the year, and the Colonial Portland Cement Company, Wiarton, also turned out a small quantity of cement, but most of the wages it paid during the year were for construction work, while the factories being erected by the Lehigh Portland Cement Company on the Bay of Quinte near Belleville, and the Ben Allen Portland Cement Company at Ben Allen, were still in course of construction on 31st December.

The business of making natural rock cement is nearly extinct in this Province, having been crowded out by the manufacture of Portland. Last year only 7,239 barrels were made, a reduction even from the output of 1906, when it was 8,453 barrels, the smallest up to that date. In 1899 natural rock cement was made to the extent of 139,487 barrels. Nearly the whole production last year was by the Empire Cement and Lime Company of Queenston, successors to Messrs. I. Usher and Sons. The other manufacturers, Messrs. F. W. Schwendiman and Company, Hamilton, Estate of John Battle, Thorold, and the Toronto Lime Company, Limehouse, did little or nothing.

Table XI showed the progress of both branches of the cement industry since the time Portland cement began to be manufactured in Ontario:

Table XI.—Production of Cement, 1891 to 1907

Year.	Natural Rock.		Portland.		Total.	
	Bbl.	Value. $	Bbl.	Value. $	Bbl.	Value. $
1891	46,178	39,419	2,033	5,082	48,211	44,501
1892	54,155	38,580	20,247	47,417	74,402	85,997
1893	74,353	63,567	31,924	63,848	106,277	127,415
1894	55,323	48,774	30,580	61,060	85,903	109,834
1895	55,219	45,145	58,699	114,332	113,918	159,477
1896	60,705	44,100	77,760	138,230	138,465	182,330
1897	84,670	76,123	96,825	170,302	181,495	246,425
1898	91,528	74,222	153,348	302,096	244,876	376,318
1899	139,487	117,039	222,550	444,228	362,037	561,266
1900	125,428	99,994	306,726	598,021	432,154	698,015
1901	138,628	107,625	350,660	563,255	489,288	670,880
1902	77,300	50,795	522,899	916,221	609,199	967,016
1903	89,549	69,319	695,260	1,182,799	784,809	1,252,118
1904	85,000	65,250	880,871	1,239,971	965,871	1,305,221
1905	14,741	10,402	1,254,360	1,783,451	1,269,101	1,793,853
1906	8,453	6,000	1,598,815	2,381,014	1,607,268	2,387,014
1907	7,239	5,097	1,853,692	2,777,478	1,860,931	2,782,575
Totals	1,207,956	961,451	8,157,249	12,788,804	9,374,205	13,750,255

The manufacture of pottery from native clay has been in a declining condition for some years, and the production fell in value from $65,000 in 1906, to $54,585 in 1907. In 1898 the output was valued at $155,000, and in 1903 at $160,000. The causes of this apparent lack of prosperity are said to be the severe competition of foreign products,

and the absence of suitable deposits of clay for the manufacture of the higher classes of goods. At the present time the potteries of Ontario using clay of home origin confine their output largely to the cheaper sort of articles, such as flower pots, jardinieres, hanging baskets, etc. In view of the mainly glacial origin of the clays of southern Ontario, occurrence of beds of kaolin or residual clay deposits of a high degree of purity is perhaps scarcely to be expected, but further and more systematic search is required before it can be asserted they do not exist. Some of the kaolinic clays of the Hudson Bay slope occurring in association with the seams of lignite on the Abitibi, Soweska, Missanabie and other tributaries of the Moose river, are likely to prove available some day for making the better classes of pottery, if not of porcelain and chinaware.[4] This, however, will not be until they are brought within reach by the extension of railway facilities.

The production of building materials and clay goods provides employment for a very considerable quantity of labor, as the following figures for the year 1907 show:

Product.	Men employed.	Wages.
	No.	$
Brick, common, and drain tile	2,850	1,015,000
" pressed and paving	508	284 881
Cement	1,259	701,493
Lime	415	155,000
Pottery	55	20,220
Sewer pipe	232	132,884
Stone	1,100	480,000
Total	6,419	2,789,478

Arsenic

Refined white arsenic to the extent of 348½ tons, worth $40,104, was produced last year. Most of it was recovered in treating ores from the Cobalt camp at the Canadian Copper Company's refining works, Copper Cliff, but a quantity was also obtained by the Deloro Mining and Reduction Company from material on hand derived from the mispickel ore of that locality. In Table I the total production of arsenic is given as 2,958 tons, which includes the tonnage of the refined article, but the figures of value are those only pertaining to the white arsenic manufactured in Ontario, since nothing, or next to nothing, was received by the mining companies for the arsenic contained in their shipments. White arsenic has many uses in the arts, based mainly upon its poisonous properties, and it is also largely employed in glass-making and as a pigment.

Corundum

The corundum mines of Ontario produced 2,683 tons of grain corundum last year, having a value of $242,608. The output was somewhat less than in 1906, when it was 2,914 tons, worth $262,448. The Canada Corundum Company and the Ashland Emery and Corundum Company are still the only concerns producing corundum. The mines and works of the former are at Craigmont, in the county of Renfrew, those of the latter at Burgess Mines, Hastings county.

The following figures show the production of corundum during the five years beginning with 1903:

Table XII.—Production of Corundum 1903 to 1907

Schedule.	1903	1904	1905	1906	1907
Corundum produced.....tons	1,119	1,665	1,681	2,914	2,683
Value of product.....$	87,600	150,645	152,464	262,448	242,608
Workmen.....No.	186	202	216	235	247
Wages paid.....$	106,332	139,548	109,128	160,354	168,333

[4] See Economic Resources of Moose River Basin, by J. M. Bell, Bur. Min. Rep., vol. xiii, pp. 159, *et seq.*

Feldspar

The feldspar quarries of Frontenac county were not operated so vigorously last year as in 1906, the production being 12,328 tons, worth $30,375, as compared with 20,373 tons, valued at $43,849. The Kingston Feldspar and Mining Company and the Verona Mining Company were the active operators last year. The product is shipped to New Jersey and Ohio for use in the manufacture of pottery and enamelled ware.

There has been a gradual but somewhat fluctuating development in the feldspar business, as the following figures for the last five years indicate:

Table XIII.—Production of Feldspar 1903 to 1907

Schedule.	1903	1904	1905	1906	1907
Feldspar raised.....tons	15,296	10,983	12,234	20,373	12,328
Value of product.....$	20,046	21,966	29,968	43,849	30,375
Workmen employed.....No.	51	34	52	89	71
Wages paid.....$	14,089	16,300	19,200	40,807	23,359

Iron Pyrites

The iron pyrites deposits of Ontario are now beginning to yield a considerable tonnage, which is partly manufactured into sulphuric acid in the Province and partly exported for similar uses to the United States. The Northland Mining Company, the Canadian Pyrites Company, the Lake Superior Corporation and the Nichols Chemical Company together raised and shipped 15,755 tons of pyrites during the year, valued at $51,842. The Northern Pyrites Company has for some time been developing an extensive deposit on Minnitakie lake, but will not be in a position to put its product on the market until the completion of the Fort William branch of the Grand Trunk Pacific railway. The sulphuric acid works erected by the Nichols Chemical Company at Sulphide, Hastings county, have been in successful operation since their completion last year. The ore is obtained largely from the company's own deposit, known as the Hungerford mine, close to the works, and partly also from other openings in the neighborhood. Sulphuric, nitric and mixed acids are made by the contact process, and are shipped in the company's tank cars to various parts of Ontario and Quebec, for such uses as refining petroleum, making dynamite, vulcanizing rubber, etc. A full account of the Iron Pyrites industry of Ontario was given by Mr. E. L. Fraleck, in the Sixteenth Report of the Bureau of Mines (1907), Part I.

Table XIV shows the growth of iron pyrites mining in the Province during the last five years:

Table XIV.—Production of Iron Pyrites 1903 to 1907

Schedule.	1903	1904	1905	1906	1907
Pyrites shipped.....tons	7,469	13,451	7,325	11,090	15,755
Value of do.....$	21,693	43,716	21,885	40,583	51,842
Workmen employed.....No.	39	60	68	128	137
Wages paid.....$	16,327	22,875	27,690	57,580	75,365

Mica

The production from the mica mines of the Province last year amounted to 456 tons of rough-cobbed material, valued at $82,929. In 1906 it was returned at 355 tons, worth $69,041. The chief producers were the Loughborough Mining Company, Kent Bros. and J. M. Stoness, J. P. Tett and Bros., and Dominion Improvement and

Development Company. In addition to these a quantity of mica raised in Ontario was purchased by trimming works at Ottawa, which is included in the total given above.

The production is practically all of the amber or phlogopite variety, and is used mostly for insulating purposes in the manufacture of electrical machinery. It is largely exported to the United States. Formerly, the larger sizes only of cut mica were marketable, but since the introduction of micanite, the smaller pieces can be utilized and now have a value as well. This has tended to an equalization of prices for mica, and has increased the proportion of saleable material to the gross output, since very much of the mica that comes to the surface is in fragments and small pieces.

Salt

The salt-producing area of Ontario is situated on the east shores of lakes Huron and St. Clair, where the limestones of the Onondaga formation contain salt beds of great aggregate thickness. For instance, a well sunk on lot 11, concession 11, in the township of Enniskillen, Lambton county, penetrated a total thickness of 705 feet of salt in going down from 1,210 to 2,015 feet in depth.[5] There were nine beds of salt in all, varying in thickness from 25 to 140 feet, two or three containing seams of dolomite, but most of them pure. There is unlimited scope here not only for the manufacture of salt itself, but also of caustic soda, bleaching powder and other chemicals requiring chloride of sodium as raw material.

The practice is to pump the brine, to form which it is in some cases necessary to force fresh water down the wells, and afterwards evaporate it. The Canadian Salt Company, Windsor, produces the greater part of the salt made in Ontario, other operators being the Empire Salt Company, Sarnia, the Western Salt Company, Mooretown, Gray, Young and Sparling, Wingham, Ontario People's Salt and Soda Company, Kincardine, Parkhill Salt Company, Parkhill, Exeter Salt Works Company, Exeter, and John Ransford, Clinton and Brussels. The quantity of salt reported made in 1907 was 62,806 tons, valued at $432,936, compared with 50,414 tons, worth $367,738 in 1906.

Statistics of production for five years beginning with 1903 are as given in the following table. Not much difference in the output is to be noted from year to year.

Table XV.—Production of Salt, 1903 to 1907.

Schedule.	1903.	1904.	1905.	1906.	1907.
Salt produced ..... tons	58,274	55,877	60,415	50,414	62,806
Value of salt produced ..... $	388,097	362,621	356,783	367,738	432,936
Workmen employed ..... No.	208	183	148	151	194
Wages paid ..... $	87,995	84,682	68,580	69,153	85,935

Petroleum

According to returns made to the Department of Trade and Commerce, Ottawa, for bounty purposes, the yield of crude petroleum from Ontario was 27,621,851 Imperial gallons in 1907, as compared with 19,928,322 Imperial gallons in 1906,—a very decided increase, and being in fact, the largest production since 1895, when it was upwards of 33 million Imperial gallons. The value of the output of 1907 was $1,049,631, exclusive of the bounty of 1½ cents per gallon paid by the Government of Canada on domestic crude, as against $761,546 in 1906. The average price per barrel was almost precisely the same in 1907 as in 1906, viz., a little over $1.33, plus the government bounty. Crude was quoted at $1.30 per barrel at the beginning of the year, rose to $1.32 in February, and to $1.34 in March, at which figure it remained until 31st December.

[5] See Rep. Bur. Min., Vol. XIV., Part I, p. 113.

The new Tilbury district in Kent county, including the township of Raleigh, contributed about 44 per cent. of the whole product of crude last year, and yielded considerably more than the united output of the Petrolea and Oil Springs fields. The following estimate of the production of the several fields or pools is kindly furnished by the Imperial Oil Company of Sarnia:

	Bbls.
Dutton	14,698
Leamington (Staples and Comber)	16,210
Bothwell	40,556
Richardson (Chatham)	941
Thamesville	1,139
Moore township	32,720
Oil Springs	55,813
Merlin (E. Tilbury and Raleigh)	344,358
Coatsworth (Romney)	49,783
Petrolea (including all districts not enumerated above)	206,285
Total	762,503

At 35 Imperial gallons per barrel, it will be observed, this estimate falls short of the quantity on which bounty was claimed and paid by 934,246 Imperial gallons, or 26,692 barrels. The discrepancy is not large, but it has been thought best to present in the schedules the official figures of the Department of Trade and Commerce. The importance of the Merlin or East Tilbury field lies not only in the large addition it has made to the production of crude petroleum, but also in the hope which it holds out of other reservoirs yet being found in the more deeply seated limestone formations of the southwestern peninsula.

The petroleum refineries, of which there are two, the Imperial Oil Company's at Sarnia, and the Canadian Oil Refining Company's at Petrolea, together distilled 34,961,706 Imperial gallons of crude petroleum, which is 7,339,855 gallons more than the entire product of the wells of Ontario for the year. As all of the domestic crude product does not find its way to the refineries, a considerable proportion being used for gas-making and other purposes, it is evident that the requirements of the home market for petroleum products is not being met by the supply of native crude, notwithstanding the recent increase in the latter.

In Table XVI are presented the statistics pertaining to the petroleum refining industry of the Province for the last five years:

Table XVI.—Petroleum and Petroleum Products, 1903 to 1907.

Schedule.		1903.	1904.	1905	1906.	1907.
Crude produced	Imp. gal.	16,640,333	17,237,220	22,131,658	19,928,322	27,621,851
Crude distilled	"	14,464,248	22,805,109	33,821,998	36,134,349	34,961,706
Value crude produced	$	1,024,597	904,437	898,545	761,546	1,049,631
Value distilled products	"	1,451,756	1,670,805	2,196,678	2,506,177	2,568,464
Illuminating oil	Imp. gal.	7,096,073	13,461,435	16,433,588	16,125,450	18,319,233
Lubricating oil	"	2,614,313	2,683,281	3,402,977	4,351,818	3,931,767
Benzine and naphtha	"	832,153	1,488,503	2,827,971	3,497,954	4,132,239
Gas and fuel oils and tar	"	1,968,172	1,962,752	5,788,351	5,961,834	5,632,608
Paraffin wax and candles	lb.	2,673,806	2,272,511	4,077,610	5,011,467	5,132,394
Workmen employed	No.	291	406	469	496	435
Wages paid	$	165,700	229,955	280,701	308,986	265,316

Natural Gas

The production of natural gas in Ontario has undergone a rapid and steady increase of late years, the value of the output in 1907 being $756,174; in 1906 it was $533,446; in 1905 $316,476; in 1904 $253,324; in 1903 $196,535; and in 1902 $199,238. This increase is due, as in the case of petroleum, to the opening up of new fields.

The Haldimand field is now producing almost as much gas as the Welland field, which for a number of years has been yielding freely for the supply of Buffalo, N.Y., and a number of towns and villages on the Canadian side of the border. Gas is being

sent from the Haldimand district to Hamilton, Brantford, Galt and other places within reach, the citizens of which are thus enabled to avail themselves of this ideal fuel for domestic purposes.

The Welland field in 1907 produced 46 per cent. of the total value of the gas output, the Haldimand field 44 per cent., and the counties of Kent and Essex 10 per cent. In the Welland field the Provincial Natural Gas and Fuel Company is the largest producer, but the United Gas Companies of St. Catharines, and the Mutual Natural Gas Company of Port Colborne, also raise considerable quantities of gas for local supply. The Dominion Natural Gas Company is the principal operator in the Haldimand field, and furnishes practically all the gas that leaves the field for the cities and towns above referred to.

Following are details of the production of natural gas for the five years ending 1907:

Table XVII.—Natural Gas Production 1903 to 1907

Schedule.		1903.	1904.	1905.	1906.	1907.
Value gas produced	$	196,535	253,324	316,476	533,446	746,499
Producing wells	No.	210	176	273	332	582
Producing wells sunk	"	20	36	58	77	161
Non-producing wells sunk	"	12	13	5	14	35
Delivery pipe	miles	312	231	461	550	810
Workmen employed	No.	138	98	130	108	181
Wages paid	$	79,945	53,674	88,865	64,968	110,832

Minor Products

Table I gives particulars regarding the output of minor products, including calcium carbide, graphite, gypsum, peat fuel, quartz and talc, which continue to be produced at about the same rate from year to year.

The most important in point of value are calcium carbide, of which $173,763 worth was shipped from the works of the two companies manufacturing this material, namely, the Ottawa Carbide Company of Ottawa, and the Willson Carbide Company of Merritton; and quartz, the production of which increased from 48,376 tons, worth $65,765 in 1906, to 56,585 tons worth $124,148 in 1907. The latter is used mainly as a flux and for furnace linings in smelting the nickel-copper ores of the Sudbury district. Part of the rock included under the heading "quartz" was really quartzite.

Mining Revenue

The year 1907 was an exceptional one in point of mining revenue. Receipts from the sale of mining lands surpassed all former records, fees from the sale of miner's licenses and the recording of claims were unusually heavy, and the new sources of revenue provided by the Supplementary Revenue Act 1907 and in other ways, helped to swell the total. The whole income was $1,731,720.72, which contrasts with $250,121, the receipts in 1906. The items are as follows:

Sales of mining land	$1,184,719 06
Leases " "	21,563.16
Miner's licenses, recording fees, etc.	272,397.13
Royalties	207,945.06
Supplementary Revenue Act, 1907	43,453.35
Assay Office, Belleville	1,642.96
Total	$1,731,720.72

It will be seen that mining lands disposed of yielded $1,206,282.22. The larger part of this sum represents the purchase money of those parts of the beds of Cobalt and Kerr lakes which were sold at public tender, the former in December, 1906, and the

latter in January, 1907. As ten per cent. only of the purchase price was required to be paid along with the tender, ninety per cent. of the price of Cobalt lake fell within the receipts of 1907. Cobalt lake brought $1,085,000, and Kerr lake $178,500.

Apart from these exceptional transactions, sales and leases of mining lands produced less than usual, the tendency of the amended mining law being to confine the purchase of mining lands to those parcels which development work has shown to contain at least some promise of mineral. Under the old law, which permitted mining lands to be bought before any development wark was done upon them to test their value, the inevitable result of a rich strike on Crown land was the immediate purchase or lease of numerous locations in the neighborhood of the find. In many cases lands so purchased were found to have no value, or were never proven, and either reverted to the Crown upon failure to comply with the necessary conditions, or remained dormant in the hands of their owners. Under the present law, the development work prescribed by the Act must be done before the grant is made by the Crown. One effect of this is that if the claim-holder finds on testing his discovery that it is not likely to prove valuable, he can and does abandon it without expending anything further upon it. This reduces the sales of mining land, both in number and also in area, since the Act limits claims to 40 acres in size, whereas formerly a claim or location might contain as much as 320 acres. Even in cases where the land is eventually purchased, the sale may be postponed, since the Act allows three years and three months in which to perform the necessary assessment work.

The patents and leases of mining lands granted during the year were as follows:

District.	Sales.			Leases.			Totals.		
	No.	Ac.	Amount. $	No.	Ac.	Amount. $	No.	Ac.	Amount. $
Rainy River				16	2,303	2,303	16	2,303	2,303
Thunder Bay	1	58	145	5	1,178	1,178	6	1,236	1,323
Algoma	13	1,069	2,528	8	1,300	1,194	21	2,369	3,722
Elsewhere	243	8,183	1,286,033	34	3,413	3,413	277	11,596	1,289,446
Totals	257	9,310	1,288,706	63	8,194	8,088	320	17,504	1,296,794

It will be observed that the total in the above table differs slightly from the sum of the items "Sales of mining land" and "Leases of mining land" in the table immediately preceding. The reason for this difference is that the latter table is a statement of the moneys actually received during the year, in other words, the collections during the twelve months, while the former table shows the amounts paid in for lands patented or leased within the year, irrespective of the date of payment. Lands paid for late in December may not be actually patented until early in January; and frequently moneys remain for some time in the Department at the credit of an applicant awaiting proof of title, completion of survey, or for other like reason.

Miners' Licenses and Recording Fees

The item "Licenses and recording fees" on account of which $272,397.13 was received in 1907, was derived in nearly equal proportion from miner's licenses and recording fees, the former yielding $137,768.40, and the latter $134,628.73. It is evident that this source of receipts must be a fluctuating one, and will vary according to the degree of activity exhibited in prospecting and staking out mining claims. In periods of excitement following upon discovery of rich deposits of mineral, there will be an influx of prospectors, more licenses will be sold and more claims staked out and recorded. In more normal times, when prospecting and the taking up of claims is less active, there will be a falling off in this branch of mining revenue. By amendment made to the Mines Act during the session of 1907, the fee for a miner's license was reduced from $10 to

$5, but the Act was not passed until 20th April. Miner's licenses expire on 31st March of every year, and must be renewed if there are any unpatented mining claims depending upon them. Such renewals made before 20th April, 1907, cost $10 each, so that the full benefit of the reduction was not realized by the prospecting community until the present year. A further amendment made in 1908 rendered it unnecessary for a mining company working the minerals on patented lands to hold a miner's license for that purpose only. For these several reasons, the receipts from miners' licenses are not likely to be as great in 1908 as in 1907.

Royalties

Royalties as an item of mining revenue first appeared in the records of the Department in 1906, when $15,000 was received from the O'Brien silver mine. The receipts in 1907 were $207,945.06, and as before were derived wholly from the O'Brien mine, under the agreement between the owners of that mine, and the Government, dated 11th December, 1906, by which the latter received 25 per cent. of the value of the ore obtained from the mine, at the pit's mouth. As mentioned above, one other producing mine, the Crown Reserve, pays a royalty to the Crown, the rate in this case being 10 per cent. Up to the end of 1907 no shipments had been made by the Crown Reserve, and consequently no royalty paid. It will undoubtedly figure in the receipts for 1908.

Supplementary Revenue

The Supplementary Revenue Act, 1907, imposed (1) a tax of three per cent. on the profits of mines in Ontario in excess of $10,000 per annum, (2) a tax of two cents per acre on all patented and leased mining lands in unorganized districts, and (3) a tax of two cents per thousand cubic feet on natural gas, 90 per cent. of which is remitted when the gas is consumed in the Province. The total receipts under the Act during 1907 were $43,453.35. Following are the details:

Profit tax	$26,922.00
Gas tax	11,527.47
Acreage tax	5,003.88
Total	$43,453.35

Owing to the fact that the profit and gas taxes were not payable for 1907 until 1st December, the full amount payable under these headings was not received before the close of the year, considerable amounts being paid in during the early part of 1908, which will appear in the accounts of the latter year.

The collection of the revenue under the Supplementary Revenue Act, 1907, is largely under the charge of the Mine Assessor, whose duties are prescribed by the Act. Mr. George R. Mickle, M.E., formerly professor of Mining Engineering in the School of Practical Science, Toronto, was appointed to the position of Mine Assessor on 10th May, 1907. Mr. Mickle having practised his profession in the nickel-copper region of Sudbury, and having acted as chief inspector of mining claims in the Cobalt district, was thoroughly familiar with the mining industry of the Province, and the conditions under which it is carried on. One happy result of Mr. Mickle's operations in the natural gas field has been to practically put an end to the almost criminal waste of gas, which, particularly in the Kent county field, accompanied search for petroleum. Mr. Mickle supplies the following notes regarding the operation of the Supplementary Revenue Act, 1907, so far:

The total amount collected under the Act for the year 1907, was $84,396.44, which should be distributed as follows:

(1) Profit tax on working mines	$65,155.38
(2) Tax on natural gas	13,513.18
(3) Acreage tax up to April 1908	5,727.88
Total	$84,396.44

As the tax for 1907 was not due till 1st December, and the whole Act was new, there were some cases where payment was not made until early in 1908, and consequently these amounts do not appear in the accounts for 1907. There were no appeals.

In explanation of the various headings under which the amount collected is given it may be stated:

(1) The sum allotted to the profit tax is what accrued to the Province from the operation of ten companies, some of them operating several mines. The greater part was from the silver mines of Cobalt. Outside of the silver, the copper-nickel mines of Sudbury contributed the next in amount. As iron ores smelted in Canada are exempt from the profit tax, there was only a small amount levied from one company, which exported a portion of its product. In addition to these, one company operating mica mines paid a tax. The number of companies that will contribute in 1908 will be greater.

(2) Regarding the tax on natural gas, the conditions of production are totally different from those obtaining in mines working a solid mineral product, in that while with the mines the owner of a certain area of surface of mineral land has only the right to mine and remove ore within the boundaries of that area extended downwards vertically indefinitely, in the case of gas the holder of a certain area on the surface may by sinking a well draw gas from a territory away beyond his surface holdings extended vertically downwards. All or a number may be drawing from a common supply, and therefore a fixed amount per unit produced seems the natural mode of taxation. There are a number of small producers, twenty-six companies or individuals in all contributing. The Act provides for two cents per thousand feet, with a rebate of 90 per cent. provided the gas is used in Canada; this is equivalent to one-fifth of a cent per thousand feet. Gas exported or allowed to go to waste is subject to the two-cent tax. The effect of the heavy tax on gas exported will be a rapid diminution in the amount piped out of the country, and it has already had a very great influence in this direction. There will be some revenue from gas wasted in 1907; some of the operators displayed an incredible indifference to waste of gas. In September last the daily loss, measured from ten wells in the Chatham field, amounted to about 11,000,000 cubic feet, or about $2,000 per day at average prices paid. The imposition of the tax was sufficient to shut off the waste of the worst of these wells immediately. With the amendments to the Act made during the session of 1908, it will be possible to handle more effectively cases where the owners neglect to act promptly, and, as long as the provisions are enforced, any serious waste cannot occur. Of the amount collected under the gas tax in 1907, $3,575.68 was on gas used in Canada, and the balance on gas exported. The prospect of any considerable revenue from the gas is very small, in spite of the fact that the production is increasing and the gas territory is being extended. The exportation is dropping, and as waste will be eliminated the revenue will decline. From the point of view of the producer and consumer in this country, this result is highly beneficial.

(3) No close estimate can be given of the amount that will probably be collected under acreage tax, as it is impossible to say how many will allow their lands to be forfeited. It will also take some time before the owners of the taxable lands become aware of the Act. It is noticeable that a greater percentage of those accustomed to pay under the Algoma land tax have settled than of those owning lands not coming under that tax. The Supplementary Revenue Act provides for a tax only on lands where there is no municipal organization, and which consequently would otherwise have no taxation. The greater part of the area subject to this Provincial tax is in those parts of the Province where mining lands were alienated from the Crown at a time when large blocks were granted, and also where the population is very small, and there are consequently few organized townships. Thunder Bay District (Judicial Division) contains 421,526 acres of lands disposed of as mining lands, and Rainy River District 151,082 acres subject to this tax. The other districts do not contain so much, so that the total amount will be well under a million acres. The revenue that will accrue to the Province from this source will probably be only somewhere in the vicinity of $10,000, but it will no doubt be of service in keeping titles clear.

The remaining item of mining receipts, namely, $1,642.96 from the Provincial Assay Office, at Belleville, represents the amount of fees paid in by prospectors and others for assays and analyses of mineral samples. The receipts from the Belleville Assay Office based, as they are, on a very moderate scale of charges, go a long way towards defraying the cost of its maintenance.

Mining Companies

There were incorporated under the laws of Ontario last year 321 joint stock companies, in connection with the mineral industry, with a total authorized capital of $319,876,000. The list is given below. A perusal of it will show that the fever for dealing and speculating in the shares of silver mining companies which followed upon the discoveries at Cobalt and Montreal river, was responsible for the formation of a large proportion of these companies, many of which were of the veriest "bubble" kind. The gold finds at Larder Lake contribute their quota, and so also do the gas and oil strikes in the southwestern peninsula. Licenses to do business in Ontario were granted to fifteen companies of foreign or extra-Provincial incorporation, having a total capital of upwards of $5,815,000. There was an altogether unusual activity in the formation of mining companies last year, as will be seen from a comparison with 1906, when the number incorporated was 263, with a share capital of $184,677,000, and still more plainly from the figures for 1905, when the incorporations were 99, with a capital of $27,509,000.

Mining Companies Incorporated in 1907

Name of Company.	Head Office.	Date of Incorporation.	Capital Stock.
Adelaide Mining Company, Limited	Napanee	October 21, 1907	$1,000,000
Aganni Cobalt Mines Limited	London	August 29	600,000
Airgiod Cobalt Mining Company, Limited	Ottawa	January 18	2,000,000
Algoma Lead, Limited	Port Arthur	July 31	1,500,000
Algonquin Larder Lake Mining Company, Limited	Toronto	May 15	2,500,000
American Consolidated Mining Company, Limited	Toronto	March 15	500,000
Anglo-Canadian Cobalt Mining Company, Limited	Toronto	March 28	1,100,000
Argyle Silver Mining Company, Limited	Toronto	February 8	500,000
A. W. Jacobs Cobalt Mines Limited	Ottawa	May 24	1,500,000
Barnard's Point Gold Mining Company of Larder Lake, Limited	Hamilton	February 8	1,000,000
Beamsville Larder Lake Prospecting Company, Limited	Beamsville	April 8	100,000
Beaver Consolidated Mines, Limited	Toronto	February 25	1,500,000
Beaver Superior Silver Mines, Limited	Toronto	May 31	3,000,000
Bedford Mica Company, Limited	Toronto	December 11	100,000
Big 4 Larder Lake Mining Company, Limited	Toronto	February 25	1,000,000
Big Pete Canadian Mines, Limited	New Liskeard	November 1	2,000,000
Blue Bell Gold Mines, Limited	Toronto	April 8	5,000,000
Bonanza Consolidated Mines, Limited	Toronto	July 10	1,000,000
Bonanza Larder Lake Mining Company, Limited	Haileybury	February 22	1,000,000
British-Canadian Smelters, Limited	Toronto	June 12	400,000
Buffalo Larder Gold Mines, Limited	Toronto	May 31	2,000,000
Canada Brick Fields, Limited	London	October 11r	100,000
Canada Consolidatèd Cobalt Syndicate, Limited	Toronto	February 21	1,000,000
Canada International Gas Company, Limited	Toronto	September 7	5,000,000
Canada Mexico Development Company, Limited	Toronto	December 4	200,000
Canada Southern Oil & Gas Company, Limited	Tilbury	December 27	100,000
Canadian Bessemer Ores, Limited	Toronto	May 22	100,000
Canadian Central Mines, Limited	Toronto	January 23	1,000,000
Canadian Mines Syndicate, Limited	Ottawa	January 16	100,000
Canadian Pacific Cobalt Development Company, Limited	Ottawa	April 8	3,500,000
Canuck Silver Mines, Cobalt, Limited	Toronto	April 17	1,000,000
Carleton Cobalt Silver Mining Company, Limited	Ottawa	January 23	1,000,000
Clark Cobalt Mining Company, Limited	Toronto	August 29	3,000,000
Cobalt and James Mines, Limited	Toronto	May 24	1,000,000
Cobalt Blue Silver Mining Company, Limited	Toronto	March 1	1,000,000
Cobalt Combine Silver Mines, Limited	Toronto	May 15	1,000,000
Cobalt Concentrators, Limited	Toronto	February 25	500,000
Cobalt Confederated Mines, Limited	Cobalt	May 31	3,000,000
Cobalt Crystal Silver Mines, Limited	Toronto	February 28	50,000
Cobalt Eagle Silver Mines, Limited	Ottawa	January 26	1,000,000
Cobalt Eldorado Mines Company, Limited	Toronto	May 1	2,000,000
Cobalt Gem Mining Company, Limited	Toronto	January 11	1,000,000
Cobalt Lorrain Mining & Development Company, Limited	Cobalt	Aprll 10	1,500,000
Cobalt Magnet Mines, Limited	Toronto	March 22	600,000
Cobalt North Star Silver Mining Company, Limited	Bridgeburg	February 8	10,000
Cobalt Silver Bell Mines, Limited	Cobalt	May 8	800,000
Cobalt Silver Fountain Mines, Limited	Toronto	July 12	500,000
Cobalt Superior Mining Corporation, Limited	Toronto	October 17	1,000,000
Cobalt Syndicate of Montreal, Limited	Toronto	March 25	600,000
Cochrane Cobalt Mining Company, Limited	Toronto	March 22	1,000,000
Coleman-Bucke Silver Mining Company, Limited	Ottawa	May 22	1,000,000
Columbia Cobalt Development Company, Limited	Cobalt	July 8	500,000
Combined Goldfields, Limited	Toronto	May 10	3,000,000
Commercial Travellers Larder Lake Gold Mining Company, Limited	New Liskeard	March 6	500,000

Mining Companies Incorporated, 1907—Continued

Name of Company.	Head Office.	Date of Incorporation.	Capital Stock.
Commonwealth Mines of Cobalt, Limited	Toronto	January 28	$5,000,000
Confederation Mines, Limited	Hamilton	March 8	250,000
Conference Exploration Company, Limited	Cobalt	June 19	500,000
Crawford Mining Company, Limited	Toronto	October 11	600,000
Credit Valley Brick Company, Limited	Toronto	November 20	50,000
Cross Lake Silver Mining Company, Limited	Cobalt	June 28	1,000,000
Crown Oil Refining Company, Limited	Hamilton	June 26	40,000
Cullen Cobalt Mines, Limited	Toronto	February 28	1,000,000
Culver Silver Cobalt Mines, Limited	Toronto	February 18	1,000,000
Deloro Mining & Reduction Company, Limited	Toronto	February 13	100,000
Dominion Bessemer Ore Company, Limited	Port Arthur	July 19	7,500,000
Dominion Exploration & Development Company, Limited	Toronto	May 10	1,000,000
Dominion Oil Company, Limited	Hamilton	August 15	100,000
Dominion Smelters, Limited	Sault Ste. Marie	January 23	1,000,000
Dr. Reddick Larder Lake Mines, Limited	Ottawa	February 6	2,000,000
Duchess Silver Mining Company, Limited	Toronto	January 16	75,000
East Bay Larder Lake Gold Mines, Limited	Toronto	May 10	1,000,000
Eastern & Cobalt Mining Company, Limited	Cobalt	May 8	1,000,000
Elk Lake Prospecting & Development Company, Limited	Toronto	March 20	250,000
Elk Lake Silver Mines, Limited	Haileybury	April 8	100,000
Emerald Development Company, Limited	Sudbury	February 18	150,000
Empire Cobalt Mines, Limited	Cobalt	March 27	3,000,000
England's Premier Cobalt Mining Company, Limited	Toronto	March 8	1,100 000
Erie Portland Cement Company, Limited	Toronto	March 6	1,000,000
Floyd Silver Mines, Limited	Toronto	March 13	2,000,000
Forest City Gold Mining Company, Limited	Toronto	May 15	1,000,000
Glengarry Cobalt Mines, Limited	Haileybury	September 13	600,000
Gold Consols, Limited	Toronto	October 25	1,500,000
Gold Mint Mining Company of Larder Lake, Limited	Toronto	June 12	1,000,000
Golden Empire Mines Company of Larder Lake, Limited	Powassan	June 6	1,000,000
Golden Horn (Larder Lake) Mines, Limited	Toronto	February 13	500,000
Good Hope Mines, Limited	Toronto	April 26	3,000,000
Gould Consolidated Mines, Limited	Ottawa	November 27	2,000,000
Grand Manitoulin Oil Company, Limited	Toronto	August 23	500,000
Greater Canada Mining Company, Limited	Toronto	April 23	2,500,000
Green Robin Gold Mines, Limited	Toronto	June 26	1,500,000
Haileybury Brick & Tile Company, Limited	Haileybury	September 3	50,000
Haileybury-Bueke Cobalt Company, Limited	Toronto	April 17	40,000
Hall Mark Silver Mines, Cobalt, Limited	Toronto	June 26	300,000
Hanson Consolidated Silver Mines, Limited	Toronto	May 24	1,500,000
Hardwood Glen Mining Company, Limited	Toronto	February 6	60,000
Harris Maxwell Larder Lake Gold Mining Company, Limited	Toronto	January 26	500,000
Hiawatha Cobalt Silver Mining Company, Limited	Ottawa	February 28	1,600,000
Higbee Mines, Limited	Toronto	April 17	40,000
Holden Silver Mining Company, Limited	Cobalt	November 6	650,000
Imperial Consolidated Mining Company, Limited	Toronto	April 23	1,500,000
Indiana Cobalt Silver Mining Company, Limited	Toronto	November 13	250,000
Industrial Natural Gas Company, Limited	Welland	November 27	40,000
Island Oil and Gas Company, Limited	Manitowaning	January 18	100,000
James Bay Gold Mining and Development Company, Limited	Toronto	July 19	2,000,000
James Mines, Limited	Toronto	February 28	25,000
James Proprietary Mines, Limited	Toronto	June 21	250,000
Johnson Mines, Limited	Toronto	August 14	1,000,000
Jumbo Cobalt Silver Mines, Limited	Toronto	February 15	1,000,000
Kerr Lake Crown Reserve, Limited	Toronto	January 16	2,000,000
Keystone Cobalt Mining Company, Limited	Toronto	January 4	500,000
Keystone Lorrain Mining Company, Limited	Haileybury	July 31	1,000,000
King Solomon Larder Lake Gold Mining Company, Limited	New Liskeard	April 23	1,000,000
Kismet Mines, Limited	Pittsburg, Pa	January 23	500,000
Lake George Cobalt Silver Mining Company, Limited	Toronto	March 6	1,500,000
Laplata Cobalt Mines Company, Limited	Toronto	April 3	1,000,000
Larder Gold Fields, Limited	Toronto	April 12	1,500,000
Larder Gold Reefs Company, Limited	Ottawa	October 2	40,000
Larder Lake Consolidated Gold Mines, Limited	Toronto	January 23	1,000,000
Larder Lake Exploration and Development Company, Limited	Haileybury	January 16	500,000
La Rose Mines, Limited	Toronto	April 13	6,000,000
Lehigh Cobalt Silver Mines, Limited	Toronto	April 17	1,000,000
Le Roi Larder Lake Mines, Limited	Haileybury	March 15	1,000,000
Little Larder Lake Gold Mining Company, Limited	Haileybury	February 15	100,000
London Cobalt Mining Corporation, Limited	Toronto	January 4	2,000,000
Long Lake Gold Mining Company, Limited	Welland	October 25	1,000,000
Lucky Boys Gold Mines, Limited	Toronto	April 16	3,000,000
Manchester Cobalt Mines, Limited	Toronto	February 28	450,000
Martin Larder Gold Mines, Limited	Toronto	May 10	1,000,000
Midas Mines, Limited	Toronto	August 2	1,000,000
Milburn Cobalt Silver Mines, Limited	Peterborough	March 8	200,000
Mines, Limited	Toronto	January 4	40,000
Mississippi Cobalt Silver Mining Company, Limited	Carleton Place	April 23	1,000,000
Mohawk Cobalt Silver Mines, Limited	Toronto	April 16	1,500,000
Monessen Cobalt Mining Company, Limited	Cobalt	August 29	200,000

Mining Companies Incorporated, 1907—Continued

Name of Company.	Head Office.	Date of Incorporation.	Capital Stock.
Monitor Cobalt Prospecting and Development Company, Limited	Toronto	April 23	500,000
Montreal Gold and Silver Mining Company, Limited	Cobalt	May 31	10,000
Montreal River International Silver Mines, Limited	Toronto	May 17	1,000,000
Montreal River Mines, Limited	Toronto	June 28	30,000
Moose Horn Mines, Limited	Toronto	August 21	2,000,000
Munroe Prospecting and Developing Company, Limited	Cobalt	May 17	200,000
Murphy Mines, Limited	Haileybury	May 22	1,000,000
New Ontario Exploration Company, Limited	Sault Ste. Marie	January 16	100,000
New York Ontario Exploration Company, Limited	Bracebridge	May 15	1,000,000
North Star Larder Lake Mining Company, Limited	Toronto	April 17	1,000,000
North West Bay (Larder Lake) Mining Company, Limited	Toronto	February 13	500,000
Northern Consolidated Cobalt Mines, Limited	Toronto	April 23	1,500,000
Northern Gold and Silver Mining Company, Limited	Ottawa	April 3	1,000,000
Northern Larder Lake Mining Co., Limited	Haileybury	February 13	1,000,000
Onaping Iron Ore Company, Limited	Toronto	June 26	200,000
Ontario Copper Company, Limited	Toronto	May 15	3,000,000
Ore Reduction Company, Limited	Toronto	March 8	250,000
Orok (Dr.) Larder Mines, Limited	Haileybury	May 3	750,000
Power City Cobalt Mines Company, Limited	Toronto	September 7	1,000,000
Premier Cobalt Mines, Limited	Toronto	December 19, 1906.	2,000,000
Pride of Cobalt Silver Mines, Limited.	Toronto	August 2, 1907	5,000,000
Prospect Developing and Mining Company, Limited	Cobalt	May 22	1,000 000
Provincial Mines, Limited	Toronto	April 8	50,000
Queen Alexandra Mining Company, Limited	Toronto	March 22	40,000
Queen of Sheba Gold Mines, Limited	Sudbury	February 18	1,000,000
Rabbit Mountain Mines, Limited	Toronto	March 6	3,000,000
Ragged Falls Mining Company, Limited	Toronto	July 19	1,000,000
Railway Reserves Mines, Limited	Ottawa	January 4	1,000,000
Red Rose Mining Company, Limited	Toronto	March 6	600,000
St. Lawrence-Cobalt Mining Company, Limited	Bridgeburg	February 13	40,000
Searchlight Larder Lake Mines, Limited	New Liskeard	May 31	3,000,000
Shamrock Silver Company, Limited	Toronto	March 1	1,000,000
Silver Belt Cobalt Mining Company, Limited	Toronto	April 10	1,500,000
Silver Circle Mining Company, Limited	Toronto	May 24	500,000
Silver Cross Cobalt Mining Company, Limited	Ottawa	March 27	500,000
Silver Pick Cobalt Mining Company, Limited	Ottawa	February 13	1,000,000
Silver Spade Mining Company, Limited	Toronto	December 2	500,000
Silver Square Mining Company, Limited	Cobalt	February 8	50,000
Smaltite Silver Mining Company, Limited	Toronto	April 12	1,000,000
Societe Electrometallurgique Canadien, Limited	Toronto	February 1	40,000
Spears Mining Corporation, Limited	Toronto	September 17	50,000
Sterling Gas Company, Limited	Port Colborne	May 8	40,000
Sutton Bay Cobalt Silver Mining Company, Limited	Haileybury	January 23	50,000
Tecumseh and Walkerville Oil and Gas Company, Limited	Walkerville	July 8	40,000
Tehkummah Oil Company, Limited	Toronto	April 10	40,000
The American Cobalt Mines, Limited	Toronto	February 15	1,000,000
The Arsenic Lake Silver Mining Company, Limited	North Bay	July 8	300,000
The Ash Grove Mining Company, Limited	Englehart	October 4	500,000
The Auld Silver Mines, Limited	North Bay	May 8	500,000
The Bay Lake Mining Company, Limited	Ottawa	June 21	1,000,000
The Big Hundred Larder Gold Company, Limited	New Liskeard	April 3	2,500,000
The Big 3 Silver Mining Company, Limited	Toronto	March 8	2,000,000
The Bloom Lake Mines Company, Limited	Sandwich	November 6	100,000
The British Dominion Mines, Limited	Toronto	May 10	1,000,000
The Canadian Smelting and Refining Company, Limited	Toronto	April 12	1,000,000
The Canadian Smelting and Refining Company, Limited	Toronto	September 13	2,500,000
The Carleton Gold and Silver Mining Company, Limited	New Liskeard	May 10	1,000,000
The Casey Mountain Cobalt Mining and Developing Company, Limited	Haileybury	January 4	250,000
The Champion Mines Company, Limited	New Liskeard	April 19	1,000,000
The Chaudiere Mines, Limited	Ottawa	March 27	1,500,000
The Chesterville Larder Lake Gold Mining Company, Limited	Chesterville	March 20	1,000,000
The Cleopatra Mining Company, Limited	Ottawa	February 28	2,000,000
The Cobalt and Blanche River Silver Mining Company, Limited	Ottawa	February 1	500,000
The Cobalt Certainty Silver Mines, Limited	Toronto	March 13	2,000,000
The Cobalt Mutual Mines Company, Limited	Haileybury	January 4	100,000
The Cobalt Raven Mining Company, Limited	Ottawa	April 16	600,000
The Cobalt Shippers, Limited	Cobalt	October 21	40,000
The Cobalt Silver and Gold Claims Company, Limited	Cobalt	May 22	40,000
The Cobalt Silver-Gold Pool Mining Company, Limited	Cobalt	March 20	100,000
The Cobalt Silver Mountain Mining Company, Limited	Ottawa	January 26	1,000,000
The Cobalt Silver Stone Mining Company, Limited	Ottawa	February 20	500,000
The Cobalt Silver Wedge Mines, Limited	Cobalt	June 12	1,000,000
The Cobden Copper Company, Limited	Sault Ste. Marie	February 15	500,000
The Coleman and Larder Lake Gold and Silver Mining Company, Limited	Toronto	January 26	1,000,000
The Cooper Tilbury Oil and Gas Company, Limited	London	July 10	100,000
The Crown Gas and Oil Company, Limited	Ottawa	July 8	250,000
The Crown Gypsum Company, Limited	Cayuga	November 22	100,000
The Dominion Larder Gold Mines, Limited	Cobalt	April 3	3,000,000
The Dominion Mining Company, Limited	Ottawa	September 3	150,000

Mining Companies Incorporated, 1907—Continued

Name of Company.	Head Office.	Date of incorporation.	Capital. $
The Dowker Brick Company, Limited	Fort Frances	March 6	40,000
The Electrical Ore Finding Company, Limited	Toronto	October 21	1,000,000
The Elgin Cobalt Mining Development Company, Limited	St. Thomas	June 6	200,000
The Elk Lake Cobalt Silver Mining Company, Limited	North Bay	March 6	1,000,000
The Elk Lake Mining and Prospecting Company, Limited	Ottawa	July 8	1,000,500
The Empire Larder Lake Gold Mines, Limited	Toronto	May 3	1,000,000
The Empress Tilbury Oil and Gas Company, Limited	Chatham	April 4	150,000
The Enterprise Corporation Limited	Hamilton	January 4	500,000
The Federal Oil Company, Limited	Toronto	March 13	200,000
The Georgian Bay Oil Company, Limited	Fort Erie	January 25	1,000,000
The Gilmour Mining Company, Limited	Belleville	September 7	300,000
The Gold Belt Mining and Development Company, Limited	Ottawa	March 25	1,250,000
The Gold Horse Shoe and Larder Lakes Mining Company, Limited	Ottawa	August 14	1,500,000
The Golden Peak Larder Lake Exploration and Mining Company, Limited	Toronto	March 22	250,000
The Gray Hadley Spelter Company, Limited	Kingston	June 14	500,000
The Great Northern Oil Company, Limited	Sault Ste. Marie	January 31	500,000
The Haileybury Silver Mining Company, Limited	Haileybury	February 20	50,000
The Haileybury Townsite Mining Company, Limited	Sudbury	March 15	750,000
The Harwich Oil and Gas Company, Limited	Chatham	November 8	100,000
The Hazel Jule Cobalt Silver Mining Company, Limited	Toronto	February 20	500,000
The Highland Mary Gold Mines, Limited	Toronto	September 16	3,000,000
The Hillman Copper Company, Limited	Sault Ste. Marie	March 6	60,000
The Independence Larder Lake Gold Mines, Limited	Toronto	October 4	4,000,000
The Ivanhoe Cobalt Silver Mining Company, Limited	Ottawa	December 27	1,000,000
The Jack Pot Cobalt Silver Mining Company, Limited	Toronto	January 16	750,000
The James Township Silver Mines, Limited	Toronto	May 10	1,500,000
The Jessop Prospecting and Mining Company, Limited	Toronto	February 20	1,000,000
The Kelly Island Lime Company, Limited	Windsor	February 22	40,000
The Knickerbocker Cobalt Mines, Limited	Toronto	January 16	550,000
The Lake Temiskaming Silver Mining Company, Limited	Ottawa	January 16	850,000
The Lansing Cobalt Mining Company, Limited	Windsor	May 31	400,000
The Larder Gold Queen, Limited	New Liskeard	April 12	1,500,000
The Larder Lake Gold Hill Mines, Limited	Toronto	April 23	1,000,000
The Larder Lake International Mines, Limited	Ottawa	July 19	5,000,000
The Larder Lake Proprietary Gold Fields, Limited	Toronto	January 16	3,000,000
The Lasalle Development Company, Limited	Toronto	March 18	1,000,000
The Lawson Mine, Limited	Toronto	April 23	5,000,000
The Lincoln Nipissing Development Company, Limited	St. Catharines	February 6	160,000
The Lincoln Silver Mining Company, Limited	Cobalt	December 23	300,000
The Load Star Mining Company, Limited	Toronto	June 28	3,000,000
The Lombard Cobalt Silver Mines, Limited	Toronto	March 27	1,000,000
The Lucky Strike Cobalt Silver Mining Company, Limited	Cobalt	March 13	3,000,000
The MacRae Mining Company, Limited	Ottawa	January 30	1,000,000
The Massive Corumdum Company of Ontario, Limited	Niagara Falls	February 13	2,000,000
The Master-Stein Cobalt Mining Company, Limited	Winnipeg	May 22	1,000,000
The McConnell Silver Mining Company of Cobalt, Limited	Ottawa	February 6	200,000
The McGill Cobalt Mining Company, Limited	Cornwall	May 31	1,000,000
The McKinnon Mines, Limited	Haileybury	May 17	1,000,000
The Meridian Bay Mining Company, Limited	Berlin	January 16	1,000,000
The Nanton Coal Fields, Limited	Ottawa	August 21	100,000
The Niagara Cobalt Silver Mining Company, Limited	Niagara Falls	January 16	750,000
The Niagara Falls Mining and Drilling Company, Limited	Niagara Falls	April 3	40,000
The Night Hawk Lake Mining Company, Limited	Toronto	October 17	70,000
The Nipissing Gold Estates, Limited	Cobalt	May 31	4,000,000
The Nonsuch Cobalt Silver Company, Limited	Toronto	May 1	50,000
The North American Oil and Gas Company, Limited	Niagara Falls	October 11	1,000,000
The North Bay Cobalt Silver Mining Company, Limited	North Bay	February 25	300,000
The North Canadian Gold Mines, Limited	Toronto	June 28	1,000,000
The North Cobalt Mines, Limited	Cobalt	November 4	1,000,000
The North Star Oil and Gas Company, Limited	Chatham	November 8	36,000
The Ottawa Mica Mining Company, Limited	Ottawa	April 23	350,000
The Ottawa Prospecting & Development Company Limited	Haileybury	June 12	200,000
The Oxford Prospecting and Mining Company, Limited	Cobalt	August 29	20,000
The Peel Oil and Gas Company, Limited	Toronto	August 29	100,000
The Pense Cobalt Mining Company, Limited	Toronto	February 18	1,000,000
The Perfect Brick and Tile Company, Limited	Ottawa	March 6	100,000
The Prince Rupert Cobalt Silver Mines, Limited	Cobalt	January 18	1,000,000
The Producers' Natural Gas Company, Limited	Hamilton	September 12	100,000
The Red Jack Mining Company, Limited	Midland	June 6	500,000
The Rex Argent Mines Company, Limited	Latchford	October 17	100,000
The Ridgeway Mining Company, Limited	Toronto	October 25	500,000
The Robinet Brick Company, Limited	Sandwich	February 6	40,000
The Rush Larder Lake Mining Company, Limited	Toronto	April 3	1,000,000
The Safe Oil and Gas Company, Limited	Chatham	February 28	150,000
The St. Lawrence Lumber & Mining Company, Limited	Cornwall	December 18	50,000
The Silbert Consolidated Mining Company, Limited	Toronto	March 1	2,000,000
The Silverfield Cobalt Mining Company, Limited	Toronto	January 4	200,000
The Silver Bird Cobalt Mines, Limited	Toronto	January 31	1,500,000
The Silver Heels Mining Company, Limited	Toronto	January 16	500,000
The Silver Ridge Mining Company, Limited	Toronto	January 23	1,000,000
The Silver Rock Mining Company, Limited	Cobalt	January 26	1,000,000
The Soo Larder Lake Exploration Company, Limited	Sault Ste. Marie	April 17	150,000

Mining Companies Incorporated 1907—Continued

Name of Company.	Head Office	Date of Incorporation.	Capital. $
The South-Western Oil and Gas Lands, Limited	Petrolea	February 20	60,000
The Stadacona Cobalt Silver Mining Company, Limited	Cobalt	February 18	1,000,000
The Strathcona Silver Mining Company of Cobalt, Limited	Toronto	March 1	800,000
The Temagami Copper Company, Limited	Toronto	April 19	2,000,000
The Tiffany Cobalt Mines, Limited	Cobalt	January 23	600,000
The Tilbury Town Gas Company, Limited	Chatham	May 31	40,000
The Toronto Tilbury Oil and Gas Company, Limited	Toronto	July 10	750,000
The Towinenie Old Indian Mining Company, Limited	Toronto	July 10	2,500,000
The Treasure Island Gold Mining Company, Limited	Toronto	October 4	1,000,000
The Veterans Prospecting and Mining Company, Limited	Toronto	January 31	1,000,000
The Viceroy Cobalt Mining Company, Limited	Toronto	February 6	300,000
The Victoria Creek Mining & Development Company, Ltd.	Ottawa	June 6	40,000
The Webbwood Copper Mines, Limited	Toronto	June 26	1,000,000
The Welland Copper Company, Limited	Toronto	April 23	1,000,000
The Wendigo Crater Mines, Limited	Cobalt	January 31	40,000
The Wentworth Quarry Company, Limited	Hamilton	December 28, 1906.	60,000
The Westmont Silver Mining Company, Limited	Toronto	November 22	60,000
The Wettlaufer Cobalt Mining Company, Limited	Toronto	August 14	1,000,000
The Winnipeg-Cobalt Prospecting & Development Co., Ltd.	Kenora	March 15	500,000
Tighe Larder Lake Gold Mines, Limited	Toronto	November 8	4,000,000
Tilbury-Romney Gas and Oil Fields, Limited	Toronto	May 24	300,000
Wayne Cobalt Silver Mining Company, Limited	Windsor	February 1	50,000
Wee-Tu Mining Company, Limited	Latchford	July 8	300,000
Wilbur Iron Ore Company, Limited	Toronto	September 3	500,000
Wilgar Lake Cobalt Mining Company, Limited	Toronto	January 26	100,000
W. J. Trethewey Company, Limited	Toronto	March 15	1,000,000

Mining Companies Licensed in 1907

Name of Company.	Provincial Head Office.	Date of License.	Capital. $
Bonanza Cobalt Mines Company, Limited	Toronto	March 22	1,000,000
Bully Boy Mining Company of Ontario, Limited	Kenora	October 11	250,000
Cobalt Coalition Mining Company	Cobalt	June 28	250,000
Cobalt Wonder Mining Company	Toronto	March 22	1,000,000
Continental Cobalt Mines Company, Limited	Haileybury	June 12	1,000,000
Net Lake Mines, Limited	Toronto	June 12	
Octo Oil Company	Sarnia	May 10	40,000
Pequot Smelting Company	Cobalt	January 11	10,000
The Abitibi Mining Company, Limited	Toronto	February 8	
The Anglo-Canadian Petroleum Company, Limited	Petrolea	May 3	250,000
The Kennedy Oil and Gas Company	Chatham	December 12, 1906.	15,000
The Nichols Chemical Company of Canada	Tweed	April 19	
The Philadelphia Cobalt Mining Company	Toronto	April 19	2,000,000
The Vancouver Portland Cement Company, Limited	Toronto	December 27	
Yukon District Gold Mining Company, Limited	Toronto	November 7	

N.B. Where no amount of capital is stated, the companies are of Dominion incorporation and no amount of capital is mentioned in the license.

Mining Accidents

There were 22 men killed in mining accidents in 1907. Of these 4 were killed above ground and 18 below ground. The cause of the fatal accidents below ground were as follows: Reloading missed hole, 2; drilled into missed hole, 2; picked into explosive in the muck or in the bottom of old drill hole, 5; falling from bucket, 4; fall of ore car down shaft, 1: fall of rock, 3; falling down shaft, 1.

From this it will be seen that 9 of the 18 men fatally injured below ground met their death through the premature explosion of some explosive. The 22 fatal accidents occurred in 16 mines.

Helen Mine

There were eight minor accidents at the Helen mine during 1907. All of these accidents were slight, and are given in detail in the table of accidents.

Canadian Copper Company

At the Canadian Copper Company's works and mines six accidents happened during the year, resulting in the death of three men; all three fatal accidents occurring on the surface.

At the Creighton mine, January 15th, John McDonald, shift boss, had his foot caught between the draw bars of two cars on the siding, necessitating the amputation of his foot.

At the Crean Hill mine, May 5th, Harry Sollers, rock house foreman, fell from the crusher floor to the ground, a distance of about forty feet, and was killed. The deceased had stopped the crusher for repairs to the screen, and when these were finished, instead of going up to the crusher floor by means of the stairs, he climbed up the side of the opening which is protected by railing on the crusher floor. He reached the opening, gave instructions to go ahead, and started to descend, when he lost his hold and fell to the ground.

At the Creighton mine, on May 23rd, Yurko Olijnyk, a Polish boy, who was employed as rock picker in the ore house, was killed by having his clothes caught in the shafting and being wound around it. Before the accident, the boy, who was 17 years old, was sent to loosen the ore in the chute, where it feeds on to the screen, by means of a bar. The boy was standing a few feet behind the shafting, and in some way which could not be explained, his coat was caught in the shafting, and he was carried over by it. There was no witness to the accident, and consequently full particulars could not be ascertained.

On September 18th, at Crean Hill mine, Frank Prestofrange, an ore sorter, was killed by being caught between the ore-sorting travelling belt and the roller. During the day's work a certain amount of ore falls from the belt to the floor, and is cleaned up by the boys at the end of each shift. On the day of the accident, the motor which drives the belt was stopped at about 5.30 p.m., and while the belt was moving slowly, the boy began to clean up the ore under the belt, and in doing so was caught and drawn between the roller and the belt.

The coroner's jury brought in the following verdict: "That the death of Frank Prestofrange on the 18th day of September, 1907, was due to his own carelessness, in going under the ore belt while it was in motion."

On November 16th, at Crean Hill mine, Matti Hyppa, mucker, was seriously injured by striking a piece of gelignite in the muck, with his pick. He was seriously injured in the side, and lost the sight of both eyes.

On November 28th, at the Creighton mine, Romeo Favero, aged 21 years, an Italian, was struck by a piece of loose rock, injuring his leg so seriously that amputation of the foot was necessary. Favero was sledging a large piece of rock at the foot of a stope when a lump of loose rock above him, weighing about 200 pounds, rolled down the stope, striking his leg just above the ankle.

Mond Nickel Company

On October 24th, at Victoria mine, William Patterson, machine helper, was instantly killed by a piece of rock falling on him in the third level of the mine. The stope had been scaled a short time before the accident, and was thought to be perfectly safe.

The coroner's jury brought in this verdict: "William Patterson came to his death through being accidentally struck on the head by a piece of falling ground."

Canada Corundum Company

On February 25th at the Craig mine, Craigmont, Fred. Gibson, a drill helper, was killed by being crushed under a large piece of falling rock.

On the morning of the accident, the powderman and the foreman of the mine worked for some time at the piece of rock, which afterwards fell, trying to take it down, before allowing anyone to work under it. They were unable to do so, and Gibson, the deceased, had just commenced work on the floor of the cut, under this rock, when it fell, killing him instantly.

The coroner's jury returned the following verdict: "That Fred. Gibson came to his death by being crushed by a falling rock, that it was accidental, and due care, as is taken in such cases, was exercised by Messrs. Campbell and Lents, (powderman and foreman), in this one; that it occurred on Monday, February 25th, 1907, in the township of Raglan."

Hungerford Pyrites Mine

At the Hungerford mine, July 22nd, James Chambers, engineer, was killed by being caught in the fly wheel of the compressor. Chambers shut down his compressor to tighten up a loose eccentric bolt, and neglected to open up the drip of the steam chest. He put his head and shoulders through the fly wheel of the compressor to tighten the loose bolt, and the weight of his body caused the fly wheel to revolve enough to move the slide valve a little, thus admitting the unreleased steam in the valve chest to the cylinder, and causing the compressor to make a quarter revolution and pinning the engineer between a spoke of the wheel and the connecting rod.

Hanlan Mica Mine

At the Hanlan mica mine on Monday afternoon, September 9th, John Waffle, pit-boss, was killed through falling off a bucket while riding to the surface. On the afternoon of the day of the accident Waffle, who was in the bottom of the pit, which is 120 feet deep, stepped into a loaded bucket, which was leaving the bottom, and rode to within about 8 feet of the surface. For some unknown reason he released his hold on the cable, and falling to the bottom of the pit, was instantly killed.

Nova Scotia Silver Mine

At the Nova Scotia mine, about 9.20 a.m. on January 7th, John Camtfield, machine drill-runner, and Sutherland Stewart, machine drill-helper, were killed through a premature discharge of dynamite. The two men charged three holes in the bottom of the shaft, lighted them and came to the surface. Of these three holes only one hole exploded, the other two for some unknown reason missing fire. After waiting about 20 minutes on the surface, the two men, having in the meantime prepared two more exploders, got two sticks of dynamite, and went to the bottom of the shaft. No communication took place between the men and the surface men after going into the shaft the second time. The bucket was lowered to the bottom for the purpose of hoisting water, which one of the men, presumably the helper, was engaged in filling at the time of the explosion, which occurred about 30 minutes after the time the men went below. The top men immediately raised the alarm, and four went down into the shaft and found both men dead. After taking out the bodies it was found on further examination of the shaft, that one of the missed holes had been cleaned out and the old exploder removed. The gun which was used for cleaning out the holes was found very badly broken, as if it had been in the hole at the time of the explosion. It appeared, therefore, that the machine man had been cleaning out the second missed hole with the gun and had got too near the old exploder, and thus caused the accident.

The coroner's jury brought in a verdict that the said John Camtfield and Sutherland Stewart came to their death by the explosion of dynamite in the shaft of the mine, the cause of said explosion being unknown, and that in their opinion no blame was attached to the company or officers of the mine, but that the occurrence was accidental

Kerr Lake Silver Mine

At the Kerr Lake mine on January 24th, at 5 p.m., Michael McNulty, timberman, was killed by a large rock falling on him from the stope of the 65-foot level. Deceased at the time of the accident was engaged in putting in timbers for the chute. Some blasting had been done to widen the stope to make room for the timbers. After blasting, the men had been set to work to scale down all the loose rock, and reported having done so. The rock which fell on deceased came from the stope of the hanging wall about 6 feet above the top of the drift, rolled on to the bottom of the chute against the hanging wall and rebounded, pinning the deceased against the opposite wall.

Trethewey Silver Mine

At the Trethewey mine on March 8th, George Thompson, shift boss, was killed through a premature discharge of dynamite in the heading of a drift in which all the holes had been reported exploded. On March 7th, 14 machine holes were blasted in the heading of the drift in which the accident occurred. The muckers were engaged mucking out the heading. When it was nearly cleaned out, Thompson went to the heading and began to scale it. Very shortly after, an explosion was heard, and the men on going into the drift found the deceased lying on the track about 12 feet from the heading. It would appear from the small quantity of freshly broken rock found at the time of the accident, that the accident was caused by there being a little explosive left in the bottom of one of the holes, unexploded, or that some of the explosive had been left by one of the holes cutting off another, and that the deceased had picked into this, causing the explosion.

O'Brien Silver Mine

On June 3rd, at the O'Brien mine, David Blair and Harry Weldy were killed by drilling into the bottom of a missed hole at the 100-foot level of No. 1 shaft. The coroner's jury brought in a verdict that they came to their death by injuries caused by the accidental discharge of powder in a missed hole.

Temiskaming and Hudson Bay Silver Mine

At the Temiskaming and Hudson Bay mine on 3rd August, 1907, Isaac McIsaac was killed by falling off the bucket. Deceased, who was engaged in timbering, had with his helper ridden to the surface on the bucket. The helper had stepped out, and deceased while still in the bucket, was getting out some measuring sticks, when the catch slipped off the foot brake of the hoist, and the bucket dropped about 10 or 15 feet in the shaft. The hoistman then stopped the bucket by means of the foot brake, and the deceased was thrown out of the bucket to the bottom of the shaft.

Right-of-way Silver Mine

At the Right-of-Way mine on 17th September, 1907, at 9.30 a.m., Ovile Lessard, miner, was killed by falling out of the bucket down No. 2 shaft. At the time of the accident the shaft was 50 feet deep and Lessard was working at the bottom. In leaving the bottom of the shaft Lessard was sitting down in the bucket, and when the latter reached the surface it was empty and upside down. It appeared, therefore, that in some unexplainable way the link on the side of the bucket for holdng it upright had slipped off, causing the bucket to overturn.

Green-Meehan Mine

At the Green-Meehan mine, September 9th, Fred. Patipaw, machine drill runner, received injuries which resulted in his death September 11th. No. 1 shaft is 100 feet deep. The first round of holes was fired on the night of the 7th, for cutting the station on the 100-foot level. No work was done on Sunday. On Monday morning two

machine men, Albert Morrissey and Fred. Patipaw, the deceased, went down in the bucket, leaving their helpers to attend to work on the surface. The air was blowing into the bottom of the shaft at 7 a.m., but Patipaw turned off the air before going down the shaft. After a few minutes the engineer got the signal to hoist, and Patipaw came to the surface with two or three unfired fuse in his hand. He went to the house where the fuse was kept and remarked that he felt dizzy. When he got back to the shaft Morrissey was still at the bottom and yelled for the bucket. Patipaw got on and was lowered to the bottom. He had not been down for more than half a minute when the engineer started to hoist the bucket, and when the bucket reached a point ten or fifteen feet from the bottom, the two men at the top saw the lights go out and the bucket sway. The foreman and another man went down and found both Morrissey and Patipaw lying in the bottom. Both men were brought to the top, and it was found that Morrissey was overcome with gas, but that Patipaw had landed on his head, sustaining a compound fracture of the left side of the skull. It was probably due to the effects of the gas that he fell from the bucket.

McKinley-Darragh-Savage Silver Mines

At the McKinley-Darragh mine, No. 2 shaft, on October 18th at 7.40 a.m., John Cobush, trammer, was killed, being struck on the head by a car falling from the 75-foot level to the 125-foot level of the mine. Cobush's partner went to send the bucket from the 75-foot level to the 125-foot level and allowed the truck on which the bucket sits to run into the shaft. Cobush was waiting at the 125-foot level to take off the bucket when his partner should lower it, and was struck by the falling truck. The shaft opening at the 75-foot level was protected by a door which is lowered when tramming is going on at that level, but the door was opened to allow the bucket to be lowered to the 125-foot level

Cobalt Lake Silver Mine

At the Cobalt Lake No. 1 shaft, at 9.30 p.m., on 28th November, Allen Allore, drill runner, and Philip Roy, helper, were killed by a premature explosion caused presumably by Allore picking into a missed or cut-off hole. The day shift had fired the holes in the bottom of the shaft by battery between 11 and 12 o'clock in the morning, and mucking had been going on all the afternoon and until the time of the accident at night. Shortly before the accident, the bucket tender saw Allore pick up a stick of dynamite and place it to one side, and about five minutes afterwards the explosion occurred. From an examination of the shaft after the accident, the fatality was evidently caused by Allore striking a missed or cut off hole with his pick. The stick of dynamite which was laid to one side had the electric exploder, which had evidently been taken from the hole by Allore.

At Cobalt Lake shaft No. 4, at 6 p.m., December 17th, Joseph Tesniere, mucker, fell down the shaft from the 86-foot level to the bottom and was killed. Tesniere had been employed during the day on the 86-foot level and about 5 o'clock he went up the raise to take candles to the men, and until 6 o'clock assisted them sacking ore. At 6 o'clock Tesniere with two men who were in the raise came down to the mouth of the No. 4 cross-cut. Tesniere here handed one of the men, Richer, the latter's candle-stick, saying that his mitts were in the vein where he was working during the day and that he was going to get them. The two men who were with Tesniere then went to the surface, and Tesniere was not seen again until the night shift found him lying in the bottom of the shaft between 7 and 8 o'clock. The deceased had apparently when coming out of the cross-cut, to go to the ladderway, walked or fallen into the shaft. The coroner's jury brought in a verdict that Tesniere was found dead in shaft No. 4 of the Cobalt Lake mine, but that the cause of death did not appear.

Nipissing Silver Mine

At the Nipissing mine, No. 12 shaft, on December 9th, Andrn Dudeck was killed by an accidental explosion of gelignite. Deceased, who was a foreigner, was employed along with a partner, mucking in the drift at No. 12 shaft. A few minutes before the accident occurred the deceased's partner left the drift for some tools; during his absence deceased must have been picking down rock and in doing so struck a stick of gelignite, which apparently had got in the muck from a cut-off hole in the heading.

Cobalt Townsite Silver Mine

At the Cobalt Townsite mine, December 18th, B. W. Leyson, superintendent, and J. McKnight, mucker, were injured, McKnight dying from his injuries shortly afterwards. McKnight was taking down ore and stuck his pick into a cut-off hole containing gelignite, causing it to explode. He was seriously injured about the face and arms. Mr. Leyson was standing directly behind him inspecting the work and had his right arm broken.

Beaver Silver Mine

At the Beaver mine, December 30th, W. Johns and J. West were injured by picking into a small piece of gelignite that was apparently left in the bottom of one of the cut-off holes in the shaft. Both men recovered in a short time.

The following table summarizes the accidents which occurred in the mines of the Province during 1907. It shows that in a total of 35 casualties, 22 men were killed, and 9 slightly and 10 seriously injured. The number killed was exactly double the number in 1906, and there can be no doubt that the rate of mortality from accident in our mines is excessive. Analyzing the table, it will be seen that of the fatal accidents, 16 were in mines of the Cobalt camp, 4 in those of the Sudbury nickel field, and 2 elsewhere. Now, the number of men employed at Cobalt is returned as 2,038, and in the nickel mines as 1,824. It is, therefore, evident that the death rate in the former mines is much greater than in the latter—in fact, nearly 3.5 times as great.

It is difficult to account satisfactorily for so great a difference. The class of labor employed in the Sudbury mines, consisting as it does, largely of men of foreign origin, cannot be regarded as superior to that at Cobalt, where the fame of the mines has drawn skilled miners from all parts of the world. Doubtless at the first opening of the Cobalt mines many men inexperienced in mining found employment, but these were drawn largely from the lumbering and farming classes of the community, wanting neither in intelligence nor dexterity.

Something is probably attributable to the character of the workings; for the most part those at Cobalt are small, requiring few men at each and consequently not favorable to so thorough an organization, especially in the matter of handling explosives, as the larger mines of the Sudbury field, where the ore is of lower grade, but occurs in much larger quantity.

It is not apparent what further aid can be rendered by legislation; the regulations embodied in the Mining Act, if carried out with strictness, probably being sufficient to eliminate nearly all causes of accident which can be foreseen or guarded against. A heavy responsibility rests upon managers, superintendents and foremen not only to insist upon the utmost possible care being taken by those under them, but also themselves to set an example of prudence and determination to avoid all risks or dangerous practices. Example is better than precept, and the remarks of Mr. E. T. Corkill, Inspector of Mines, who discusses the same matter in his report on the Mines of Ontario, are commended to the thoughtful attention of all concerned with the management of mines. From a purely selfish point of view, a low death rate is a most desirable thing for a mine owner; but human life is precious, and apart from interested motives, nothing should be left undone to rob the business of mining of as much of its hazard as possible.

Table of Mining Accidents, 1907

No.	Date.	Mine or Works.	Name of Injured Person.	Result of injury.			Above ground.	Below ground.	Nature of Injury.	Cause of Accident.
				Slight.	Serious.	Fatal.				
1	Jan. 7....	Nova Scotia	John Camfield	....	....	1	....	1	Killed instantly	Reloading missed hole.
			Sutherland Stuart	....	....	1	....	1	" "	
2	" 15....	Canadian Copper Co	John McDonald	....	1	....	1	....	Foot crushed	Caught between two cars
3	" 24..	Kerr Lake mine	Michael McNulty	....	....	1	....	1	Killed instantly	Fall of rock.
4	Feb. 14....	Helen mine	George Dizzozi	1	....	....	1	....	Shoulder and back bruised	Fall from car on ice.
5	" 21....	Canada Corundum Co	Fred Gibson	....	....	1	....	1	Killed instantly	Fall of rock.
6	Mar. 8....	Trethewey mine	George Thompson	....	....	1	....	1	Killed instantly	Picking into explosive in bottom of hole
7	May 4....	Canadian Copper Co. (Crean Hill mine)	Harry Sollers	....	....	1	1	....	Died in twelve hours	Fell from crusher floor to ground.
8	May 21....	Helen mine	John Curtis	1	....	....	....	1	Side bruised	Fall off ladder.
9	" 23..	Canadian Copper Co. (Creighton mine)	Yurko Olijnyk	....	....	1	1	....	Died same evening	Clothing caught in shafting in rock house.
10	" 29....	Helen mine	George Sundblad	1	....	....	....	1	Leg bruised	Fell into ore chute.
11	" 30....	Big Ben Cobalt mine	J. Larmont	....	1	....	....	1	Badly bruised	Fell into shaft.
12	June 3....	O'Brien mine	Daniel Blair	....	....	1	....	1	Killed instantly	Drilled into missed hole.
			Harry Weldy	....	....	1	....	1	Died following day	
13	" 24....	Helen mine	Andruck Michael	1	....	....	....	1	Scalp wound	Ore falling down chute.
14	July 22....	Hungerford mine	James Chambers	....	....	1	1	....	Fracture of lower jaw and base of skull	Caught between fly wheel and connecting rod of compressor.
15	Aug. 3....	Temiskaming & Hudson Bay mine	Isaac Melsaac	....	....	1	....	1	Killed instantly	Fell from bucket.
16	Sept. 9....	Hanlan mine	John Wallie	....	....	1	....	1	" "	" " "
17	" 9 ...	Green-Meehan mine	Fred Patipaw	....	....	1	....	1	Fracture of skull	Overcome by gas and fell from bucket.
18	" 17....	Right-of-Way mine	Ovile Lessard	....	....	1	....	1	Killed instantly	Fell from bucket,
19	" 18..	Canadian Copper Co. (Crean Hill mine)	Frank Prestofrange	....	....	1	1	....	Killed instantly	Crushed between belt and roller of picking table.
20	" 19....	Cobalt Central	James O'Donnell	....	1	....	....	1	Eyes injured	Explosion of powder in muck.
21	Oct. 18....	McKinley-Darragh mine	John Cobush	....	....	1	....	1	" "	Fall of car down shaft.
22	" 24....	Victoria mine	William Patterson	....	....	1	....	1	" "	Fall of ore.
23	Nov. 4....	Helen mine	Edward Shepard	1	....	....	....	1	Scalp wound	Ore falling down stope.
24	" 4....	O'Brien mine	Oratic Tirobossi	....	1	....	1	....	Eye injured	Picking into explosive.
25	" 8....	Foster mine	Alexander Mackenzie	....	1	....	....	1	Injury to right eye	Drilled into unexploded dynamite.
			Simon Guthro	....	1	....	....	1	Right arm broken	
26	" 16....	Canadian Copper Co. (Crean Hill mine)	Matti Hyppa	....	1	....	....	1	Eyes injured	Picking into gelignite.
27	" 28....	Cobalt Lake mine	Allen Allore	....	....	1	....	1	Killed instantly	Picking into missed hole.
			Philip Roy	....	....	1	....	1	" "	
28	" 28....	Canadian Copper Co. (Creighton mine)	Romeo Favaro	....	1	....	....	1	Foot crushed	Rock rolling down stope.
29	Dec. 9 ...	Nipissing mine	Andru Dudeck	....	....	1	....	1	Killed instantly	Picking into piece of gelignite in muck.
30	" 17....	Cobalt Lake mine	Joseph Tesniere	....	....	1	....	1	" "	Fell down shaft.
31	" 17....	Helen mine	Franz Manilla	1	....	....	....	1	Face injured by line rock	Caught by blast, returning before it exploded,
32	" 18....	Cobalt Townsite mine	James McKnight	....	....	1	....	1	Injuries resulting in death	Struck piece of gelignite in muck.
			B. W. Leyson	....	1	....	....	1	Right arm fractured	
33	" 20....	Helen mine	Alex Brown	1	....	....	1	....	Bruise	Caught between two dump cars.
34	" 26....	Helen mine	Walter Falk	1	....	....	....	1	Scalp wound	Rock falling from roof.
35	" 30....	Beaver mine	W. Johns	....	1	....	....	1	Face cut	Struck piece of gelignite in muck.
			J. West	1	....	....	....	1	" "	
		Total casualties		9	10	22	8	33		

The Mining Divisions

The administration of the mining lands of the Crown is now by virtue of the mining law very largely in the hands of the Recorders of Mining Divisions, of which twelve have been set apart under the Mines Act. In three of these Divisions, however, there is not sufficient business to warrant the appointment of local Recorders, and applications for the recording of mining claims are made to and passed upon by the Deputy Minister of Mines, Toronto, as well as for claims situated in the southeastern portion of the Province in which no Mining Divisions have yet been created.

Reports have been obtained from the Recorders of the several Mining Divisions, briefly summing up the transactions of the year, and they are herewith reproduced.

Temiskaming

Mr. George T. Smith, Mining Recorder of Temiskaming Mining Division, whose office is at Haileybury, makes the following report:

Below please find statement of business transacted in this Mining Division during year ending 31st December, 1907.

Miners' licenses issued	4,676
Renewal licenses issued	2,047
Mining claims recorded	7,860
Received for licenses and fees	$130,890.30

The past year was a very active one in this Mining Division. In the early part of the year the rush to Larder Lake was an unprecedented one in the history of this country, many discoveries of gold being reported. Later on the activity extended to the Montreal River district, and still later on the country lying south of the township of Lorrain claimed considerable attention from a large number of prospectors.

The opening of a recording office at Larder Lake relieved the office at Haileybury to a considerable extent. Quite a number of discoveries of gold were reported from the Abitibi Lake region.

Many valuable discoveries were made in the townships of James, Smythe and Tudhope, on the Montreal river, and considerable development work has been done in all these townships.

The contry south of Lorrain has been showing up well. A large number of claims have been recorded. Many good discoveries, chiefly of cobalt and silver, have been made, and a number of properties have changed hands. Though the season was somewhat advanced before much attention was paid to this section, a good deal of development work has been going on It is claimed that on the opening of navigation considerable shipments of ore will be made and a busy season is anticipated.

Coleman

Mr. T. A. McArthur, Assistant Recorder of Coleman Special Mining Division, reports as follows:

Herewith is statement in connection with Coleman Special Mining Division for 1907.

Miners' licenses issued	2,071
Miners' licenses renewed	861
Number of applications for mining claims recorded	291

Total amount of fees collected and remitted to the Department $32,599.25, a small portion of which has been refunded in cases of rejected applications.

In 1905 this township had seventeen shipping mines.

In 1906 the number increased to nineteen, and in 1907 the township of Coleman had twenty-nine shippers.

Sudbury

The Mining Recorder for the Sudbury Mining Division is Mr. F. F. Lemieux, who reports:

The business of this office shows a marked increase for 1907, the number of licenses issued being 718, number of renewals of licenses 104, and the number of claims recorded 456.

The amount of money received and remitted to the Department was $11,774.00.

Prospecting has been general over the whole district, notably in the Temagami Forest Reserve, and in the unsurveyed territory east of the township of Garrow, where discoveries of silver, copper and gold have been made. Many claims have been taken up for iron in the townships of Norman and Rathbun. Along the "Soo" branch of the Canadian Pacific railway, in the townships of Spragge, Salter and Berth 123, claims for copper have been taken up. To the north and west of Sudbury iron discoveries have been made, which according to the discoverers, are of great value.

The land rolls and maps of the different townships of this Division have been much used by prospectors and others, and are of great practical value, judging from the expressions of those using them for researches.

Sault St. Marie

Mr. S. T. Bowker, Recorder of the Sault Ste. Marie Mining Division, makes the following report:

Pursuant to your instructions of the 7th inst., I beg to report as follows on the operations of my office during the year 1907:

The total number of miners' licenses issued from this office was 376.

The total number of mining claims recorded was 291.

The total amount of fees forwarded to the Department was $7,048.11.

Port Arthur

Mr. J. W. Morgan, the Recorder at Port Arthur, says:

In compliance with your request, I beg to make the following brief report concerning the transactions of this office: During the year 1907, 259 miners' licenses were issued, 317 claims recorded, $5,103.40 was collected for licenses and recording claims. All of this money has been remitted to the Department. Six hundred and fifty-four lithograph maps, blue prints and tracings were furnished to prospectors, 402 copies of the Mines Act and reports distributed, and 1,075 letters and post cards containing information or instruction were written and mailed.

I have also to report that much new territory has been explored in this Mining Division, and discoveries of iron, gold and silver made where these minerals were not previously known to exist. Large deposits of high grade bog iron ore have been found near the boundary between Thunder Bay and Rainy River districts, a number of gold claims have been taken up near Sturgeon lake, red hematite has been located near Beck siding in the township of McGregor, as well as in the township of Conmee, along the Mattawin river and east of lake Nepigon. Extensive deposits of both magnetite and red hematite are reported as having been found near Savant lake in the northwest part of this Mining Division.

Lieut.-Col. S. W. Ray, of Port Arthur, has opened up the Tip-top copper mine, and has purchased a smelting plant, which could not be taken in owing to the want of a road. Lieut.-Col. George A. Shaw, of Toronto, is developing a magnetic iron ore property near Silver Mountain, also a silver location west of Silver mountain. The following parties have been doing considerable work: Alexander L. Durupt on iron claims near Beck siding; R. P. Kelly and Dr. Ewing of Fort William on iron ore locations in the Mattawin district, where F. Hillé also is developing an iron ore property.

Many new prospectors from British Columbia and the United States have written me expressing their intention to begin explorations in the country north of lake Superior early next spring.

Kenora

Mr. C. W. Belyea, Mining Recorder for the Kenora Division, reports as follows:

Re yours of January 7th, asking for brief report of transactions in this Mining Division for the year 1907, I have to report the following:

Number of miners' licenses issued	88
Received for licenses and fees	$1,458.50

The mines of the Lake of the Woods district have suffered from the general financial depression of the last year. Only two mines, the Grace mine and the Empire mine, have been working during this time. Both have stamp mills and have been producing gold, and are in active operation to-day. The principal mines, the Sultana, Mikado and Regina, have been closed down for some time. However, I understand that the

Regina mine is being pumped out, and that the trustee, Gen. Sir Henry Wilkinson, K.C.B., has arrived from England, and no doubt the mine will be further developed this year.

The Mikado mine has been offered for sale, and a party is now in the east forming a company to purchase same. It is believed that this mine still holds large quantities of pay ore.

There would seem to be every reason to expect a resumption of work on many of the old mines in the near future. There is no doubt that the district has been suffering for the last three or four years from the result of the wild cat speculation in stock (not mines) of the boom days. Moneyed men are beginning to look this way again, and a number of recent discoveries are likely to attract much attention.

Some very interesting finds have been made on the line of the Grand Trunk Pacific. Samples of stibnite and galena carrying silver have been brought in by the workmen at various times.

The Northern pyrites mine, some miles north of Dinorwic, has been opened up, and the owners are well pleased with their prospects.

The mines of the Sturgeon lake district north of Ignace will receive a great impetus on completion of the Superior section of the Grand Trunk Pacific railway, as at present it costs $45.00 per ton for freighting supplies. This has compelled many to suspend operations.

A vein 150 feet wide carrying copper and gold in paying quantities has been found quite recently by David Guthrie and G. S. Campbell, two prospectors, north of Pine station on the Canadian Pacific railway. Samples of fine muscovite have been brought in from this new section. Much iron ore has also been found, but this has not been worked to any extent.

Parry Sound

The Recorder for the Parry Sound Mining Division, Mr. H. F. McQuire, reports:—

There have been one hundred and two claims taken up in the district to December 31st, 1907—27 of them being in the township of Lount. There is considerable activity in this township. The samples produced are of iron, some also show copper and traces of nickel. Several of the properties are under option and will be more thoroughly prospected during the season of 1908.

In the immediate vicinity of Parry Sound a few claims have been taken up for feldspar. With the exception of the Parry Sound Copper Mining Company, the owners of all copper prospects in the district have done little or no development. The former company, whose property is known as the McGown mine, have at present a small force drifting from one of their old shafts, with the expectation of striking the rich bornite vein from which several car loads were taken some years ago.

Indications point to some activity in iron and mica during 1908, as a number of claims have been applied for north of Parry Sound which will be prospected next season.

The convenience of the office to the district seems to be appreciated, and it will be brought into closer touch with northern and westerly points on the opening for traffic of the Canadian Northern Ontario railway, and the Canadian Pacific line to Sudbury during the summer of 1908.

Larder Lake

The Recorder's Office for the Larder Lake Mining Division is at Larder city, Mr. J. A. Hough being Recorder. Mr. Hough reports:—

A total of 3,813 mining claims were recorded during the year 1907 in the Larder Lake Mining Division, and a total of 22,780 days' work were recorded as having been performed on these claims during the same period.

The work was filed as follows: 30 days' work on 614 claims; 60 days on 25 claims; 90 days on 13 claims. This leaves a balance of 3,148 claims staked during the year on which no work was reported. In addition, 13,990 days' work was recorded as having been performed on mining claims staked in the Division prior to 1907, making a total of 36,770 days' work reported for the year.

1,497 mining claims were transferred, and the books show 481 of these as being held by 47 chartered companies.

37 certificates of record were granted and 8 certificates of performance of working conditions (in full). One mining claim was patented.

It should be remembered that the recording office at Larder Lake was opened in June, 1907, and that prior to that time the recording for the Division was done at Haileybury.

The vast majority of the claims were recorded at Haileybury during the first four months of the year.

The particularly wet season, the bad plague of flies and the poor transportation facilities were accountable for the non-performance of development work on a large number of claims.

Some parts of the Division show so much staking, restaking, overlapping, and other irregularities, that it was found to be impossible to identify or straighten out some of the claims, and they have consequently been left idle. Disputes could not be filed owing to the number of posts on the ground and the illegibility of the writing on the posts.

The building of roads by the Government from Boston and from Tomstown, the expiration of all extensions of time, the promised and expected shipment of gold bricks from the stamp-mills now in course of erection here, should lead to a very busy season for 1908.

Montreal River

Mr. T. H. Torrance, the Recorder for the Montreal River Mining Division, whose office is at Latchford, writes thus:—

I beg to make a brief report of the business transacted in this office from the date of its opening, June 1st, 1907, to December 31st, 1907:—

Number of licenses issued	273
Number of applications for mining claims received and recorded	866
Number of applications for Working Permits received and granted	107
Moneys collected and remitted to Department	$16,168 40

There has been a great deal of prospecting in this Division during the past season, and while mining is at present only in its prospecting stage, a number of very rich finds of native silver and cobalt have been made, particularly in the townshp of James, and in the vicinity of Silver and Hubert lakes, also around Anvil lake, where are situated the claims known as the White claims.

Camps are being erected on many of these claims, and work will be pushed forward during the whole of the winter months.

At present a railway to connect the James township district with the T. & N. O. railway is urgently needed.

It was only during the latter part of the season that the attention of the public was drawn to the richness of the East branch of the Montreal river, particularly around Bloom, Obuskong and Lost lakes, but notwithstanding this, a large number of claims have been recorded and are being developed as rapidly as circumstances will permit. Messrs. G. W. Duncan and J. W. Sanderson, representing a party of Toronto capitalists, also Shields Bros., representing Windsor and Detroit people, are building camps, and are preparing to spend the winter in developing. They have brought out some very rich samples of galena and silver, and expect to be in a position to ship before the end of the coming season. These people deserve great credit for having built, at their own expense, a road from Elk lake to Bloom lake, a distance of 12 to 15 miles.

From enquiries made and the maps sent out from this office I look for a rush of prospectors to that part of my Division in the early spring.

The following table shows the moneys collected by the several Mining Recorders and remitted to the Department.

Recorder.	Mining Division.	Miner's Licenses.	Recording Fees,&c.	Total.
		$	$	$
Belyea, C. W.	Kenora	856 00	602 50	1,458 50
Bowker S. T.	S. S. Marie	2,364 00	4,684 00	7,048 00
Hough, J. A.	Larder Lake	866 50	4,097 75	4,964 25
Lemieux, F. F.	Sudbury	6,210 50	5,563 50	11,774 00
Macphail, A	Montreal R.	2,697 15	6,744 00	9,441 15
Morgan, J. W.	Port Arthur	1,730 50	3,372 90	5,103 40
McArthur, T. A.	Coleman	24,174 00	8,425 25	32,595 25
McQuire, H. F.	Parry Sound	485 00	733 00	1,218 00
Smith, Geo. T.	Temiskaming	51,683 45	79,206 85	130,890 30
Torrance, T. H.	Montreal R.	570 00	6,157 25	6,727 25
Total		91,637 10	119,587 00	211,224 10

The above table does not include the sums received and forwarded by Mining Recorders on account of the purchase of mining lands, on application being made for patents of the same.

The remainder of the revenue derived from miner's licenses and recording fees, etc., $61,173.03, was received directly by the Department at Toronto.

Diamond Drills

In February, 1907, the "S" diamond drill, of which Mr. E. K. Roche remains mechanical manager, was ordered to Kerr lake in the Cobalt district, on request of the Crown Reserve Mining Company, Limited, with the view of prospecting that portion of the lake bed purchased by the Company from the Crown, in January of the year previous. The drill continued working until about the end of May, when it was removed to St. Mary's, Perth County, to test some deposits of limestone near that place for Mr. F. G. Sanderson. Drilling was completed here in July, and the plant was returned to Kerr lake to finish there, which it did on 18th October. It was then transferred to the Rothschild property, on the northwest part of lot three in the third concession of Coleman, in which Mr. J. A. Jacobs and others of Montreal were interested. It was still employed at the Rothschild mine at the close of the year.

On the Crown Reserve property were drilled five holes, of a depth respectively of 155 feet, 140 feet 4 inches, 237 feet, 160 feet 6 inches, and 190 feet—in all, 882 feet 10 inches. The ground in places was shattered and broken. According to the manager the material penetrated in the holes included hard banded slate, conglomerate, "Keewatin" and diabase. In several of the holes excellent values of silver were struck, and the result of the drilling was to show that the property was a valuable one. The total cost of the operations was $4,258.38 or $4.82 per foot of drilling. Deducting 35 per cent., the share borne by the Department as provided by the regulations, the net cost chargeable to the Crown Reserve Company was $2,767.95 or $3.13 per foot. The gross wear and tear of diamonds amounted to $669.38, or $0.758 per foot gross.

At St. Mary's the work being in limestone was less expensive. Seven holes were put down 104, 68, 62, 70½, 22, 63½ and 85 feet respectively, the aggregate depth of drilling being 475 feet. The rock proved to be overlaid with a heavy burden of soil, gravel and boulders, difficult to penetrate, and in one instance the drill manager was obliged to abandon the attempt to reach bed rock, at a depth of 22 feet. The whole cost of the operation was $908.02 being at the rate of $1.91 per foot. After deducting the rebate of 35 per cent., the cost to Mr. Sanderson was $590.22 or $1.48 per foot. The cost of diamonds was $70.65; or per foot $0.148 gross and $0.0968 net. In putting down these holes in the limestone, 20 or 22 feet per 10-hour shift was drilled without difficulty, and as will be seen by the figures given, the wear on the diamonds was very small.

The "C" diamond drill, which is larger than the "S" plant, and capable of boring to a depth of 1,200 or 1,300 feet, as against 450 or 500 feet for the smaller drill, was in January, 1907, shipped from Paris, where it had been in use for the Alabastine Company, to Moose Mountain siding, thence to be conveyed to the neighborhood of Burwash lake in the Temagami Forest Reserve, with the intention of prospecting certain locations taken up for iron ore by Messrs. Mackenzie, Mann and Company. It proved impracticable to transport the whole of the plant from Moose Mountain to Burwash lake, consequently the drill was never actually set at work. In June, however, the outfit was sent on to Vermilion station on the Canadian Pacific railway for the purpose of prospecting a mining location on Eagle lake owned by Mr. J. E. Stanton of New York. Mr. Ralph J. Mackenzie, who had been appointed mechanical manager of the drill, went to Moose Mountain and got the plant en route for Vermilion, but before reaching his

destination left the Department's service. His place was filled by the appointment of Mr. John A. MacVicar, who took charge about the end of August. There being no settlement whatever at Eagle lake, Mr. MacVicar found it necessary to go into camp and provide his men with board and lodging. The freight charges for transporting the drilling plant were considerable, and the general cost of working was much enhanced by the remoteness of the situation, and the consequent high rates for transportation of supplies. In addition, drilling was slow, the ground proving hard and broken and the wear on the diamonds being severe. There were five holes put down, 23, 6, 22, 142, and 100 feet 6 inches respectively; total depth of drilling 293 feet 5 inches. The gross cost of the operations was $3,930.37, or $13.39 per foot, the net cost being $8.69. Loss of diamonds amounted to $1,200.98, or at the rate of $4.09 per foot. The comparatively small amount of drilling, the distance from transportation facilities and the tough and shattered condition of the rock formations encountered, combined to make the work here very expensive.

Provincial Assay Office

Mr. N. L. Turner, Provincial Assayer, reports as follows:—

The writer took charge of the work of the Assay Office on May 22nd, Mr. A. G. Burrows, the assayer previously in charge, having been transferred to other work under the Bureau of Mines.

The Provincial Assay Office was established in July, 1898, by the Ontario Government, as an aid to the mineral development of the Province. During the ten years of its existence it has been of much use not only to the public, but also to the Bureau of Mines. The fees have been kept as low as possible in order that prospectors and others may have their samples examined at a low cost. The lowness of the rates has a tendency to increase the number of samples submitted, but the fact that fees are charged prevents the office being imposed upon, which would possibly be the case if no fees were charged. Many samples are assayed and valued, which if the usual commercial fees had been charged would not have been sent in, and in this way many good finds are located. The office is well equipped with assay and analytical apparatus for testing the great variety of ores which occur in Ontario.

The past year was a very busy one for the Assay Office, indicating that there are many prospectors in the mineral districts looking for deposits of commercial value. Samples were received not only from Ontario, but also from Quebec, Manitoba, British Columbia, and the United States. As in previous years, the greater part of the samples came from the northern part of the Province. The Montreal River district furnished many good samples of silver-cobalt ore, the Cobalt district also as usual many excellent specimens. A number of good gold-bearing samples were received from the Larder Lake camp. Only one sample of all those sent in from the Cobalt district showed gold in paying quantities; this would seem to point to a comparative rarity of gold ores in that region. The search for copper bearing ores was very active during the whole year, and as a consequence many samples of good copper pyrites were examined. Many of these came from the district back of Parry Sound. In some cases the ores not only carried paying quantities of copper, but also gold. The Moose Mountain district furnished numerous samples of iron ore of very good quality, as also did North Hastings. There are a number of iron ore deposits in the latter region but the lack of good transportation facilities prevents their development. From the Sudbury district a large number of pyrrhotite samples were received. These with one or two exceptions contained nickel, most of them carrying a very small amount, but others had the metal in paying proportion. From other parts of the Province gold, lead, zinc, molybdenum and other ores were received, as well as limestones, clays, feldspar, fluorite and corundum.

The total number of samples submitted for examination quantitatively was 1,389, and for qualitative examination and identification 169. Fees were collected to the amount of $1,635.56, which were transmitted to the Bureau of Mines. Work to the value of $759.60 was performed for the Bureau of Mines, making the total value of the work performed during the year $2,395.16.

The following list of determinations will show the laboratory work for the year:—

	Assays for Public.	Assays for Bureau.	Total.
Gold	617	177	794
Silver	462	345	807
Copper	227	6	233
Cobalt	35	69	104
Nickel	75	27	102
Manganese	1	1	2
Molybdenum	2		2
Zinc	24		24
Lead	39		39
Platinum	6		6
Arsenic	7	16	23
Tin	2		2
Mercury	1		1
Bismuth	1		1
Chromium	1		1
Total	1,500	641	2,141

	Analyses for Public.	Analyses for Bureau.	Total
Metallic iron	130	19	149
Ferric oxide	13	3	16
Ferrous oxide		1	1
Alumina	19	3	22
Silica	20	3	23
Lime	16	4	20
Magnesia	16	4	20
Sulphur	57	6	63
Potassium	6	1	7
Sodium	6	1	7
Phosphorus	48		48
Titanium	32		32
Carbon in graphite	2	1	3
Fixed carbon	13		13
Ash	13		13
Volatile combustible	13		13
Moisture	16		16
Miscellaneous	24	6	30
Total	444	52	496

Total assays	2,141
" analyses	496
" identifications	169
Total determinations	2,806

Work for the Pubic

(1) Issuing reports, consisting of assays, analyses and identification of samples submitted for testing.

(2) Supplying information, where possible, to owners of mineral lands, who desire to know of probable purchasers, and also advising as to uses, values, etc., of their minerals.

(3) Sending typical samples of ores and minerals to prospectors who desire to use them for comparison.

Work for the Bureau of Mines

(1) Analyses and assays of samples of minerals and ores collected by the Government geologists during their summer explorations.

(2) Assay of samples from the Government claim inspectors for the Cobalt and other districts.

(3) Making check analyses and assays on ore shipped from the O'Brien mine to the Copper Cliff smelter.

(4) Checking the sampling of ores shipped from the O'Brien mine to the Deloro Mining and Reduction Company.

(5) Making check assays and analyses on the ore shipped to Deloro.

(6) Calculating results of sampling and assaying ores shipped to Deloro.

During the year considerable new apparatus was put in the office. A disk grinder with suitable power was installed which greatly hastens the work of grinding samples. A new combination assay furnace was placed in the assay room, and is giving entire satisfaction.

The methods of analysis and assaying used are the standard methods. In the case of high grade silver-cobalt ores scorification is used in preference to other methods.

Ordinary gold and silver samples are assayed by the crucible method, each sample being assayed in duplicate, so that the chances of error are minimized.

Cobalt and nickel, by the electrolytic method, using the nitrite separation. Considerable experimental work has been carried on in regard to the estimation of these two metals with very encouraging results.

Copper, by the electrolytic and cyanide methods.

Lead, by the molybdate method.

Notes

In sending in samples it is desirable to have them no more than three pounds in weight. All samples are sampled down and ground to 100-mesh, and where necessary, finer. Wet samples are dried at 100 degrees C. and analysis reported at that temperature. Circulars of rates and mailing bags are supplied to those desiring to send in samples for examination. To insure a prompt report all fees must accompany samples.

Samples brought to the office will be examined free of charge.

One assistant, Mr. H. C. Barlow, was employed during the entire year, and during the summer months Mr. W. J. Embury was also employed, both of whom did excellent work.

SUMMER MINING CLASSES

BY E G R ARDAGH AND W MALCOLM

It was thought expedient by Mr. T. W. Gibson, Deputy Minister of Mines, to confine the work this year almost entirely to the Temiskaming country, including in that area the Larder lake and Montreal river regions. The results of the classes shew that with the exception of those held in one or two localities the choice of the field was well made, for not only was the attendance all that could be desired, but the interest shown by those present was of the greatest, particularly in those districts where energetic prospecting was being carried on.

Methods of Work

A few words setting forth the scope and purpose of the work may not be out of place here. The purpose is in its nature two-fold. First, the imparting of information enabling the prospector and miner to search intelligently for valuable mineral, and, on having discovered the same, to recognize it; and secondly, though indirectly, to develop the mineral resources of the Province.

With these ends in view we considered it advisable not only to distribute mineral samples, describing their associations and the simple tests by which they can be recognized, but also to deliver several lectures, accompanied by lantern slides, fundamental in their nature, or especially applicable to the particular locality. The minerals distributed were for the most part the more commonly occurring ones, but in addition to these samples of a few rarer economic minerals were given out; minerals such as tinstone and cryolite, which it is hoped will be discovered in Ontario, and others such as niccolite and smaltite, which prospectors are eagerly looking for in certain districts. From thirty-five to forty species of mineral were studied at each camp, common field tests being applied and a few remarks made concerning the composition, occurrence, distribution, uses and value. Every man present received a sample of each mineral, and, to wrap it in, a printed paper bearing the name of the mineral and a few words relative to its value, uses and composition. In order to utilize the daylight the minerals were distributed early in the evening, and at several camps in the afternoon as well, usually out of doors. The lantern lecture was delivered afterwards, and for this a commodious room was always placed at our disposal.

Bessemer

In accordance with instructions we held our first class at Bessemer, the camp of The Mineral Range Iron Mining Company, five miles east of L'Amable in Hastings county.

Mr. H. C. Farnum, general manager of the company, whom we met on the train in company with Mr. Gordon, vice-president, kindly had our baggage put off at the company's siding, about a mile south of L'Amable, and conveyed by their own railway, "The Bessemer and Barry's Bay," to the camp. We were hospitably received and housed by the management.

The Company has in its employ in the neighborhood of one hundred men, of whom more than one-half are English-speaking. Of the latter we had approximately fifty, the average attendance per night being thirty-one. We opened the class on Saturday, May 11th, and closed it on Thursday, May 16th.

Mining operations are being actively carried on at two of the Company's mines, viz.: Number Three Mine and Number Four Mine; from these a very good quality of magnetite is being shipped. Analyses of two ten-carload shipments shewed in one case iron 60 per cent. and phosphorus .014 per cent.; in the other case iron 57.1 per cent. and phosphorus .013 per cent. The company has additional ore bodies from one of which a considerable quantity of magnetite was shipped last winter when the snow made

transportation possible. The railway line has been surveyed and partially graded to this deposit, but the management has not yet had sufficient time to lay steel beyond Number Four mine. The company has also on its property several outcrops of fine-grained white marble, which they hope upon examination will prove valuable.

From Bessemer we shipped in for next year's work a quantity of magnetite, marble and talc.

On Friday, May 17th, Mr. Bingham, Secretary of the company, to whom we are indebted for many kindnesses, took us to the Central Ontario railway on the track velocipede, sending our mineral boxes, etc., by road to L'Amable on the company's waggon.

Latchford

Arriving in Toronto the same evening we caught the Cobalt special, reaching Latchford, the gate-way to the Montreal River region, next morning. Owing to the late spring, the ice had just gone out of the Montreal river, and the small army of prospectors who had been waiting at Latchford for the ice to break up were already setting out in numbers every day of the week we were there. Each day saw numerous fresh arrivals, but these for the most part remained in the town only long enough to complete their outfits before going up the river. The consequence was that a number of men were in attendance for only one or two days; this accounts for the total of seventy, and the comparatively small daily average of twenty-three. In many cases we made up complete sets of minerals for those who could not remain till the end of the week, or who had missed the first day or two of the class. Owing to their eagerness to reach the field of action, many of the prospectors did not attend any of the classes; however, the great majority of those who were present exhibited intense interest in the work. The classes were opened in Brown's hall on May 18th, and closed on May 25th.

Cobalt

On May 27th we commenced a class at Cobalt in the Reading Camp Association's room, which the management kindly placed at our disposal. This room was invariably crowded with men whose time might otherwise have been far less profitably spent. We cannot but recognize the fact that the Association is carrying on a wonderfully useful work and consider it well worthy of the attention of those philanthropically inclined. We are also indebted to Mr. J. G. McMillan for comfortable quarters when in Cobalt, not only during this week but later when we repeated our class there in July.

Cobalt being one of the most active mining centres in the Province, we had, as might be expected, largely attended classes both in the afternoon and evening. We estimated the total attendance at one hundred and thirty, the daily average being seventy.

Through the kindness of Mr. E. L. Fraleck of the Cobalt Lake Mining Company, we collected, by dint of hard labor, about one hundred and fifty pounds of niccolite from the dump at number three vein; a large quantity of cobaltite and smaltite was also presented to us by Mr. J. W. Evans, M.E. All of this and also some cobalt bloom was shipped in for next year's work. The class in Cobalt was closed on June 1st.

Haileybury

On Monday, June 3rd, we opened a class at Haileybury in the Mining Commissioner's room and kept it open till June 8th inclusive. The average attendance there was only thirteen, and the estimated total thirty-five.

New Liskeard

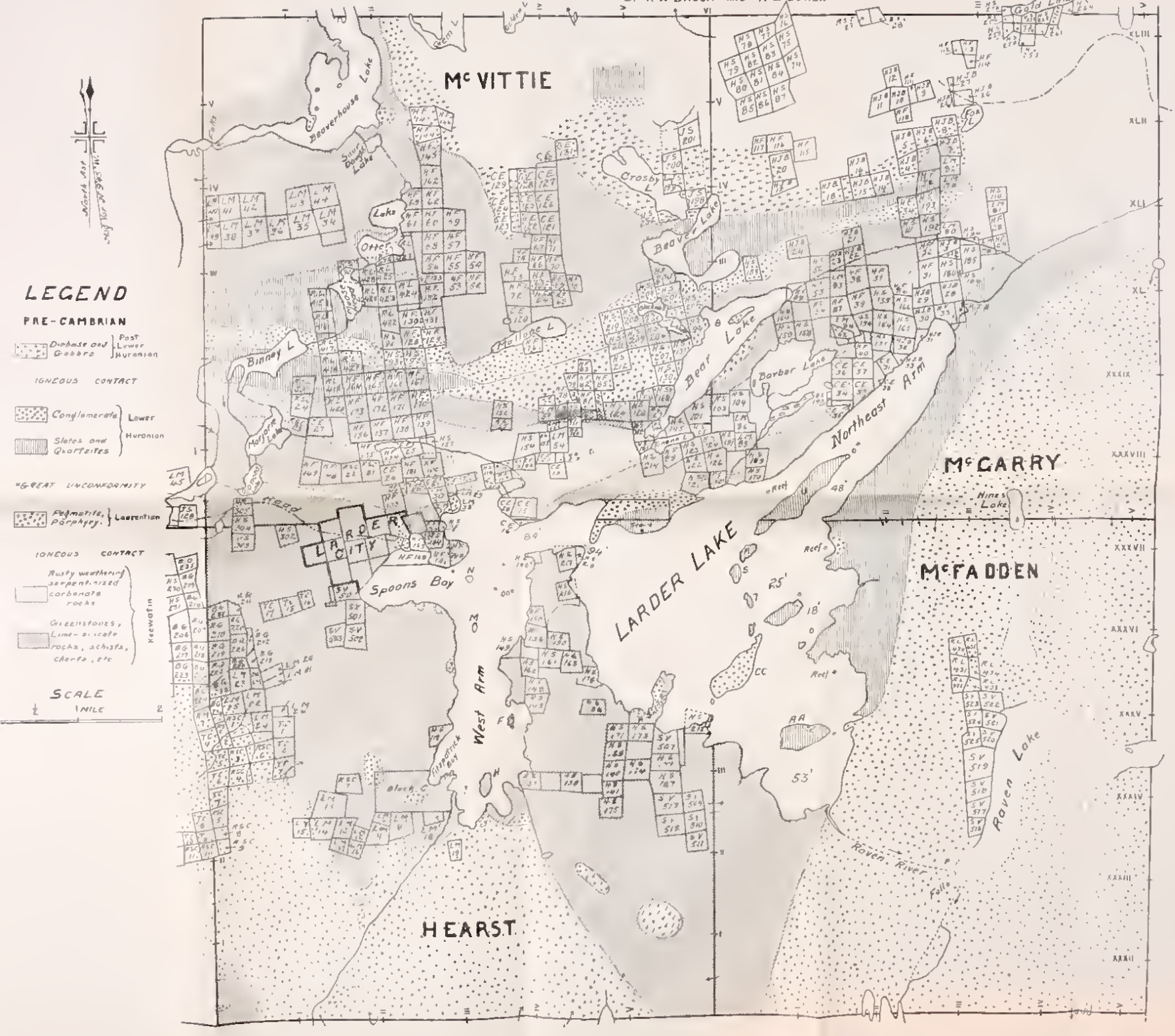
In the matter of attendance New Liskeard, where we held a class the week following, shows up no better. Average fourteen, total estimated at thirty.

Geological Sketch Map

LARDER LAKE REGION

To accompany seventeenth report of Bureau of Mines, 1908

BY R.W. BROCK AND N.L. BOWEN



Englehart

In responso to an earnest request from Mr. Williams Hugh, Crown Lands Agent at Englehart, we decided to open a class there on June 17th, instead of holding one at Tomstown as first suggested. Mr. Hugh made arrangements which enabled us to use the schoolhouse, and, largely through his efforts, a good attendance of interested men resulted, despite the fact that Englehart is some distance from the mining and prospecting field. The average daily was twenty-two, and the total was estimated at forty-five. The class was closed on June 21st, a day before the end of the week, in order to allow us extra time to reach the Larder Lake country for which we set out early on the 22nd.

Larder Lake

Having estimated the comparative cost of entering the Larder Lake district by waggon and by canoe, we concluded that the latter would entail far less expense; so we decided to take that route though the labor connected with the trip was by no means inconsiderable. This may be the more readily appreciated when one considers that there are eleven portages to be made. It was of course out of the question for us to take the projection lantern, and we even made an estimate of the probable attendance, and counted out the minerals to conform to this in order to avoid unnecessary weight.

We entered Larder Lake early on Monday morning, June 24th, and, upon looking the situation over, we concluded Larder City to be most suitable place for gathering the prospectors about us. Notices were posted up at the foot of the lake, the Narrows, Spoon's Bay, etc., points at some distance from Larder City, so that all who possibly could reach the class might be notified.

From the point of view of attendance and enthusiasm the Larder City class ranks among the first. The daily average was thirty-nine, and the total estimated to be seventy-five.

There were numerous prospectors scattered around the lake and through the country back from the shores, and there is no doubt the number would have been far greater had it not been for the flies and also the excessive cost of transportation, five dollars per hundred pounds, which raised supplies to a price almost prohibitive to men of ordinary means.

The class was closed on Friday, June 28th, and early Saturday morning, with considerably lightened packs, we set out on our return trip, reaching Tomstown on Sunday.

Giroux Lake

The next class was opened at the Foster mine near Giroux lake on Tuesday, July 2nd. There we hoped to reach not only the men in the Foster mine camp, but those at the University Mine, a few from other neighboring camps, and also from the construction camp for the railway spur line. In this we were not disappointed. Almost all the men in the mining camps in the immediate neighborhood were English-speaking. From the two large camps, the Foster and the University, about half the men attended. The management kindly placed at our disposal for the lantern lectures their commodious dining hall, in which we were able to accommodate the large class quite easily.

The average attendance was thirty-eight, the total about fifty-five. The class was closed on Saturday, July 6th.

We are indebted to Mr. Adler of the Foster mine for a keg of cobalt bloom, and to Mr. Flynn of the University mine for a large quantity of chalcopyrite. This was all shipped in for future distribution

Cobalt Again

Arrangements had been made with Mr. Brigstocke of the Drummond mine by which a class should be held at that camp the week following, but owing to the miner's strike this was out of the question. This contingency, for the suddenness of which we were quite unprepared, threw our plans into some confusion, and forced us at the last moment to make new arrangements. We decided that it would be better for us to commence a class in Cobalt without some notice than anywhere else, consequently we opened there the evening of the day the strike was declared, Monday, July 8th.

The afternoon sessions were most successful; the attendance at the evening classes was however scanty, owing to the suppressed excitement possessing the crowds of strikers gathered in the centre of the town. The average attendance was fifty-seven, the estimated total one hundred and twenty. The class was closed on July 13th.

Elk Lake

On the Monday following we set out for the mouth of Bear river (Elk lake P.O.), in James township, about fifty-five miles above Latchford on the Montreal river, arriving late that night.

As in the case of Larder Lake, we left the projection lantern behind. The settlement at Elk Lake P.O. is a village of tents, of which we counted thirty-five on the Reserve shore and eighteen on the opposite bank. There are also numerous camps back from the river, and many of these sent contingents to attend the classes. Owing to the personal interest which everyone took in prospecting, we had the largest and most enthusiastic class of the season. The average attendance was seventy-six, and the total was estimated at one hundred and thirty. The class was opened on Tuesday, July 16th, and closed on Saturday, July 20th.

Many men brought in mineral specimens and also samples of rock for identification.

Camp Coghill

A letter from Mr. J. M. Coghill, of Camp Coghill, Montreal river, on the line between the townships of Auld and Lundy, asked us, if we possibly could, to hold a class there. This we decided to do. Although the class was not large, owing to the paucity of prospectors in the neighborhood, the interest exhibited was keen. Work was commenced on July 22nd, and ended on the 26th.

Latchford's Second Class

After consulting with the mayor, Mr. J. J. McNeill, who expressed an desire that we should hold a class in Latchford, and who offered us the schoolhouse for the lantern lectures, we decided that we could hardly do better elsewhere, owing to the fact that the flies had driven so many of the prospectors out of the woods, and that a number of these men were still awaiting in Latchford till the winged pests had thinned out somewhat before re-entering the field.

The attendance this week was much better than at the class held there in May. The average was thirty, the estimated total fifty.

Notes

Probably in no other Canadian mining district were gathered together so many men who have prospected or mined in the world's most famous camps. Here one meets men from the gold fields of Kalgoorlie, the diamond mines of Kimberley, the tin deposits of the Straits Settlements, and all the mining centres of North America. Many of these men attended the classes in addition to Canadians, and not infrequently expressed the wish that other countries would assist the prospector by classes similar

to those held in Ontario. Many prospectors also attended who had been present in former years, several of whom mentioned that they had been assisted immensely in their work by the information imparted, and two successful men stated that the discoveries they had made were rendered possible in a great measure by the knowledge gained at these classes.

The number of college men, undergraduates as well as graduates, of universities and technical schools, who are assisting in the development of this new country, both by prospecting in new fields and in the development of those now firmly established, is quite remarkable, and great credit is due the Canadian college man for the part he is playing in the opening up of this new country, a country vast in possibilities as in area.

We estimate the number of mineral samples distributed to be in the neighborhood of twenty thousand.

The table which follows summarizes the attendance at the various classes:—

PLACE.	DATE.	Average Daily Attendance.	Estimated Total Attendance.
Bessemer	May 11th-May 16th inclusive	31	50
Latchford	May 18th-May 25th "	23	70
Cobalt	May 27th-June 1st "	70	130
Haileybury	June 3rd-June 8th "	13	35
New Liskeard	June 10th-June 15th "	14	30
Englehart	June 17th-June 21st "	22	45
Larder City	June 24th-June 28th "	39	75
Foster Mine	July 2nd-July 6th "	38	55
Cobalt	July 8th-July 13th "	57	120
Bear River	July 16th-July 20th "	76	130
Camp Coghill	July 22nd-July 26th "	18	20
Latchford	July 29th-August 2nd "	30	50
	Total	426	810

MINES OF ONTARIO

BY E T CORKILL

Gold Mines

There were more gold mines in operation in Ontario during 1907 than in 1906, although the number of stamp mills in operation and the production of gold were practically the same. Most of the properties in operation were engaged in development work. In northwestern Ontario the greatest activity was in the Upper Manitou lake country, where the Laurentian mine for most of the year carried on both mining and milling. The Victory, Paymaster and Detola, all in the vicinity of Gold Rock, were doing development work, while the Minnehaha, at the northeast end of lake Minnehaha, comprising claims S V 434 and S V 435, began work late in the year.

At Sturgeon lake considerable prospecting was done, and at the St. Anthony gold mine the mine and mill were steadily run during the latter part of the year. On Lake of the Woods little was done. On Eagle lake the mill at the Grace mine was completed. The mines of the Northern Light Mining Company were inactive.

In the Michipicoten district the Algoma Power Company have installed at the High Falls of the Michipicoten river a power plant with 600-h.p. turbine and 450 kilowatt generator. This power is being used by the LePage Gold Mining Company, which is operating the Grace mine. A number of other prospects in the district are being developed, of which the Golden Reed and the Braddock were in operation at the time of my inspection in October, 1907.

In the vicinity of lake Wahnapitae, the Crystal gold mine is being re-opened after having been closed down for some years.

Development of the gold properties in eastern Ontario was carried on in 1907 in about the same manner as at any time during the past ten years. The Golden Fleece Mining Company during the winter erected a 10-stamp mill and ran it for a couple of weeks, when it was closed down and all work at the mine ceased. Development work is being done on a number of properties, consisting of the Big Dipper, Boerth, Sophia and Pearce.

Although a couple of stamp mills have been erected at Larder lake, the development done on any of the properties is small, and until systematic work has proven the value of the camp, it will be regarded largely from a speculative point of view.

Iron Mines

Prospecting for iron in western Ontario is still being carried on extensively both by test pitting and diamond drilling. The reported discoveries of bog ore along the main line of the Canadian Pacific railway at Niblock station, have attracted considerable attention. The closing down of the blast furnace at Port Arthur caused the Atikokan Iron Company's mine at Atikokan to cease operation in the fall of 1907, after having been in operation for 6 months, shipping about 100 tons of ore per day. The Helen mine at Michipicoten is still the largest shipper in Ontario, and is at present the only producer of hematite. The slump in the iron market in the United States had a deterrent effect on the production of iron ore from Moose Mountain, so that up to the present no ore has been shipped, although a considerable tonnage is mined and stock piled. In eastern Ontario the Wilbur iron mine on the Kingston and Pembroke railway is making daily shipments of 150 to 200 tons to the furnace at Sault Ste. Marie, Ontario. The daily output from the Mayo mine, operated by the Canada Iron Furnace Company, at Bessemer, is being gradually increased; at present about 150 tons per day is being shipped.

Copper and Nickel

Not much activity is noticeable in the production of copper outside of the Canadian Copper Company and the Mond Nickel Company. A new copper smelter has been erected at Thessalon, but no ore has as yet been smelted at it. The fall in the price of this metal has naturally had a somewhat discouraging effect.

Laurentian gold mine, 200-foot level stope.

The company operating the Bruce mines got into financial difficulty in 1907, and all work at the mines ceased. Smelters have been erected at Sturgeon Falls and Trout lake at a considerable expenditure for the purpose of smelting copper ores as well as the cobalt-nickel-silver ores of the Cobalt camp. These furnaces have, however, not as yet entered the market as buyers of any kind of ore.

The nickel-copper mines in the Sudbury area are maintaining production on about the same scale as formerly, and improvements are being prosecuted energetically at the smelting plants of both the Canadian Copper Company and the Mond Nickel Company. The former company have, during the last six months made additions to their smelting capacity by erecting a new converter building in which ten converter stands have been built, five being already in commission. A new mixing and relining plant for the converters has been installed in this building.

The Mond Nickel Company are developing a water power in the township of Lorne, on the Vermilion river, with the view of using electric power for driving all their machinery both at the smelter and at the mine. At the Whistle property on the north nickel range, work has been carried on during the year in diamond drilling and shaft sinking.

The Worthington mine, which has been closed for some years, has been pumped out and some shipments of ore made.

Other Minerals

The production of iron pyrites in Ontario while yet small and confined to three localities, the Helen mine, Rib lake and Hastings county, will probably be increased with the completion of the Winnipeg-Fort William section of the Grand Trunk Pacific. Some very promising developments in iron pyrites were made last year at Goudreau lake in the Michipicoten district.

The mica industry received a severe set back in the fall of 1907 owing to the slump in electrical business. The orders for new machinery with the electrical companies were nearly all cancelled, so that no demand was made for mica except for repairs and renewals. The price of the larger sizes of mica has not fallen in proportion to that of the small sizes.

Work has recently been started on the two graphite properties at Black Donald and Port Elmsley. Certain changes have been made in the mill and experienced graphite men put in charge of them.

The silver mines of the Cobalt camp have been fully dealt with in Chapter II of Part 2 of the Sixteenth Report of the Bureau of Mines, and it is therefore unnecessary to deal with them here. The information contained in that Report is brought up to the date of the present volume, and those specially interested in that district are referred to the Report mentioned for full details. The mines were visited and inspected to see that the regulations provided by the Mining Act regarding the working of mines were observed. A number of investigations were held into the causes which resulted in fatal accidents at some of the mines.

Accidents and their Causes

In connection with these accidents, there are a number of points to which it has been found necessary to call the attention of mine managers. The most important is the great number of accidents caused by the premature explosion of an explosive, either dynamite or gelignite. In 1907, there were 35 mine accidents in Ontario, resulting in injuries to 41 men, 22 of whom were killed. Of these 18 were killed below ground in 15 casualties. The causes of death were as follows: 2 men killed while reloading missed hole, 2 through drilling into missed hole, 5 by picking into an explosive, 4 from falling from bucket, 3 by being caught in machinery, 1 by being struck by a car falling down shaft, 3 by being struck with falling rock, 1 by falling down shaft.

and 1 by falling from crusher floor to ground. It will thus be seen that 9 of the men, or 50 per cent. of the number killed underground met their death through an explosion of dynamite or gelignite, which are the only two explosives used in Ontario.

Dealing with the causes of accident, we find 2 men killed in reloading missed holes. Such accidents show negligence on the part of someone, as there is no excuse for an accident happening in reloading a missed hole. The Mining Act, section 164, subsection 10, states that a charge which has missed fire shall not be withdrawn, but shall be blasted. This is quite safely done if the miner understands his business, and if he does not, the superintendent of the mine is responsible for putting an incompetent man to handle explosives.

Two other men were killed during the year through drilling into a missed hole. The same section of the Act directs that all missed holes shall be reported to the mine captain or foreman in charge of the next shift if the hole has not been blasted. This is a most essential point, but no missed hole should even be left for the next shift to blast; but should be blasted as soon as found, and all old bottoms should be examined before work is done near them to see that there is no explosive left in them. The practice of starting a new hole in the bottom of an old one because it is an easy place to begin, should not be permitted under any circumstances, and the miner who follows this practice, or the foreman who allows it, is simply courting accidents.

The most prolific source of accidents from explosives is picking into them either in old bottoms or lying loose in the muck, 5 men having been killed during the year from this cause. In shaft sinking there is considerable danger from this source which is unavoidable, and this very fact should lead to increased caution. The driller firing a round of holes in a shaft should be very particular in counting the reports, and if there are any reports short this should be reported to the next shift, who should also be notified just where the holes were drilled, so that in mucking out due caution may be used in picking up the bottom. The old theory held by some miners that if the exploder is taken out of the hole there is no danger is a misconception, and miners should be taught differently. Superintendents and foremen are much to blame for accidents of this kind who fail to instruct the men under them properly, or who neglect to see that the men exercise due care. Accidents from picking into loose explosive which has got into the muck from a cut-off hole are difficult to guard against. A good precaution when dynamite is used is either to take the wrapper off the dynamite cartridge or to slit it so that if the dynamite does get into the muck it disintegrates, and is so scattered about that there is not sufficient in one place to do any damage. Another safeguard is to keep the muckers from using the pick too strenuously. It is as effective when mucking in drifts to use the pick for pulling the muck down, as to sink it up to the eye, to the great danger of the workman. The latter practice is simply energy uselessly expended.

Another source of accident is the introduction of an explosive with which the men are not familiar. This is especially true in the cold weather when the explosive has to be thawed. Dynamite is the explosive to which long use has accustomed all miners. When thawing it they gauge its readiness for use by its pliability. Other explosives, such as gelignite, even when pliable may not be properly thawed, and in fact the latter is quite soft when partly frozen. In the condition near its freezing point, gelignite is most dangerous, as is also dynamite. Superintendents should see that all explosives are in the thawing house exposed from 4 to 6 hours to a temperature of 85 to 90 degrees F. If warm water is used, the temperature of the water should not be above 125 degrees F. Care should also be taken that the explosive should not be removed from the thawing house in cold weather until the miner is ready to load his holes.

There are other classes of accidents which contribute to the formidable total of deaths and which are often ascribed to unavoidable sources of danger inseparable from the business of mining. The soundness of this contention cannot be admitted. It is not difficult to indicate directions in which carelessness, neglect of regulations, or the permission of practices fruitful of danger leads to accidents which the superin-

tendent in whose mine they occur seeks to class as unavoidable. The practice of riding in buckets, which contributed 4 to the death roll in 1907, is strictly prohibited by the Mining Act. The mines in Ontario are for the most part shallow workings, and there is consequently no excuse for men riding to the surface on buckets or skips when proper ladder-ways are provided, as is the case in practically all the mines. Such accidents are nearly all due to negligence on the part of the superintendent in enforcing this rule. Some superintendents try to excuse themselves by saying it is impossible to prevent men riding on the bucket. Such excuses are fallacies and only an attempt to shirk responsibility. In a large number of mines in the Province such practices as riding on the bucket or skip are unknown.

The necessity of guarding shaft entrances at all levels of the mine cannot be too much emphasized. Not only should superintendents have all levels so guarded, but they should also see to it that the guard rails are always kept in position when the shaft is open. A careful superintendent, one who tries to guard against all possible accidents and is always on the alert to prevent them, will in time intuitively instil into the minds of his men a like degree of care and regard for their own safety, while a superintendent who is careless and reckless about the work of the mine can only expect his men to be the same, and has himself to blame if his men do foolhardy things.

I.—Northwestern Ontario

Upper Manitou Lake District

The gold mines of Upper Manitou lake were the scene of considerable activity during the year. The property that has occupied the largest share of attention is the

Laurentian Mine

The location and way of access to this mine have been fully described in former Reports of the Bureau of Mines. It was in active operation during 1907 and the 20-stamp mill was worked for a great part of the year. The property is operated by the Anthony Blum Gold Mines, Limited, under the holding company known as the Imperial Gold Mines, Limited. Most of the work during 1907 consisted in sinking the main shaft from the 200-foot to the 300-foot level, cutting a station on this level and drifting north 110 feet and south 30 feet. A short cross-cut has been driven west 75 feet from 15 feet north of the shaft. On the second level the raise has been put through north of the shaft to the first level, and some stoping done just above the level. On the first level south of the shaft a raise has been put up 50 feet, 15 feet from the shaft. A drift has been made here south from the shaft 60 feet, and some stoping done. North of the shaft a raise has been put up 40 feet, and a body of ore stoped out 30 feet in height by 30 feet in length. The vein material on which the drifts have been run consists of quartz lenses through a vein filling of slate and chlorite schist, which is apparently an altered form of the greenstone.

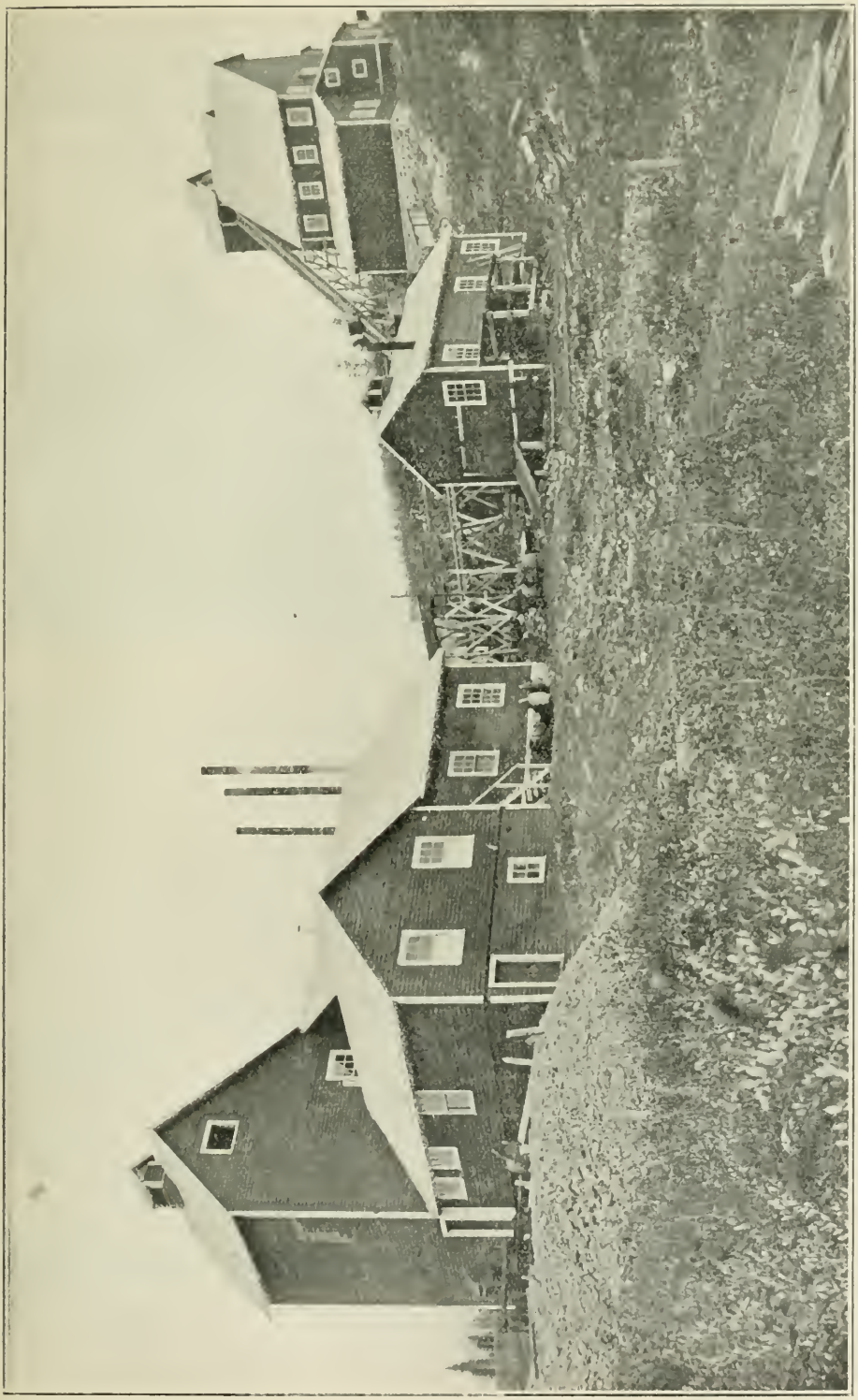
A number of minor alterations have been made in the mill during the year. A 5-inch pipe line has been laid to Upper Manitou lake, a distance of about three-quarters of a mile and a pumping plant installed on the shore of the lake. The pipe line has been laid about 4 feet under the surface so as to be below the frost zone.

Mr. R. B. Nickerson is superintendent, employing an average force of 30 men.

Paymaster Mine

The Northern Development Company, owners of the Paymaster mine, which is on mining location H W 20 and is situated about one half mile southeast of the Laurentian, was engaged during the year in development work. The main shaft has been sunk to a total depth of 275 feet. On the 200-foot level drifts have been driven north 135 feet and south 75 feet. The attention of the management was called to the necessity of having the shaft properly timbered and ladder-way put in.

Mr. Geo. Thow is superintendent, employing a force of 12 men.



Laurentian gold mine ; shaft house and stamp mill.

Detola Mine

The Detola Development Company is developing a quartz vein on mining location H W 411, which lies about one-half mile east of the Laurentian mine. A shaft has been sunk to a depth of 60 feet on the vein, which carries considerable iron pyrites. It has a strike north and south cutting the greenstone.

A 25-h.p. boiler and hoist have been installed and new camp buildings constructed on the shore of Mud lake.

Mr. Bliss is president of the company, and is in charge of operations.

Victory Mine

Mining location McA 28, lying about one-half mine northwest of the town of Gold Rock and formerly known as the Neepawa, is being worked by the Manitou Mines, Limited.

Mr. H. D. Alston is managing director and Mr. J. Beck, superintendent. The shaft was originally sunk to a depth of 100 feet, and at the time of my inspection, had not been put down any farther. Considerable surface prospecting had, however, been done on other parts of the location. A new plant was being installed consisting of two 50-h.p. return tubular boilers, an 8¼ × 10-inch Lidgerwood hoist and straight line compressor. Boiler house, blacksmith shop and camp buildings had been constructed. Instructions were given to have the old timbers at the collar of the shaft removed and replaced with new ones.

The vein has a strike of 20 degrees east of north, and consists of lenses of quartz occurring in a slaty formation or vein filling in the greenstone. This slaty formation is an altered variety of the greenstone.

Eagle Lake District

With the exception of some prospecting, no work was done on the veins in this district during 1907, save at the Grace mine. Here a mill was erected during the spring of 1907 and some ore milled. But little development work has, however, been done at the mine beyond what has been described in former Reports of the Bureau of Mines.

Lake of the Woods District

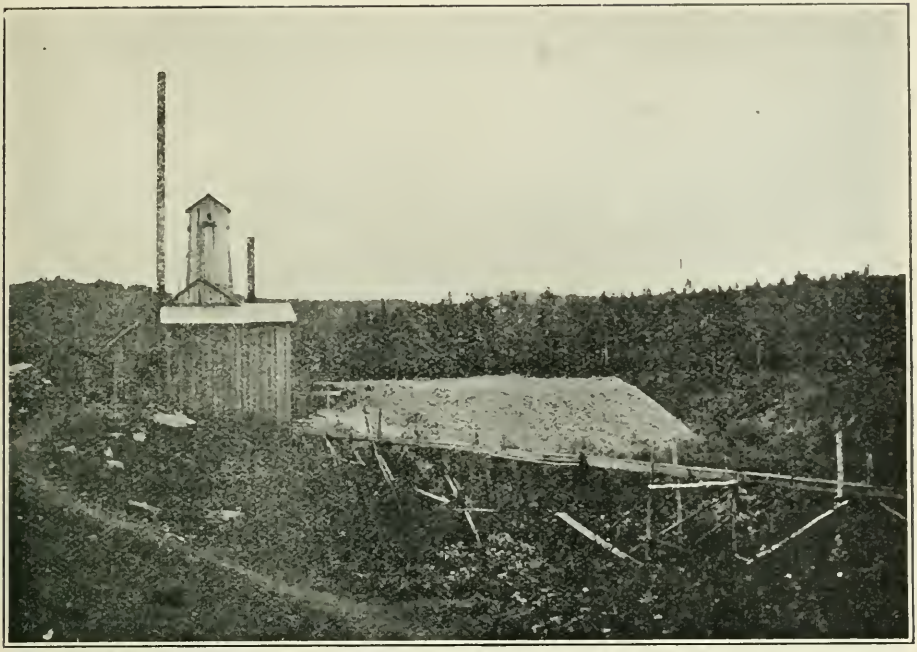
There was less activity in mining in the Lake of the Woods district during 1907 than any year since the boom following the discovery of gold there. The properties on which anything was done during the year have been operated very irregularly, so that really no systematic work was done on any of them. On Shoal lake the Olympia and Golden Horn were the only mines at which work was attempted. East of Lake of the Woods and Whitefish bay, the Empire Gold Mining and Milling Company have during the winter of 1907 been developing their property. A mill run was made to test the value of the ore.

Sturgeon Lake

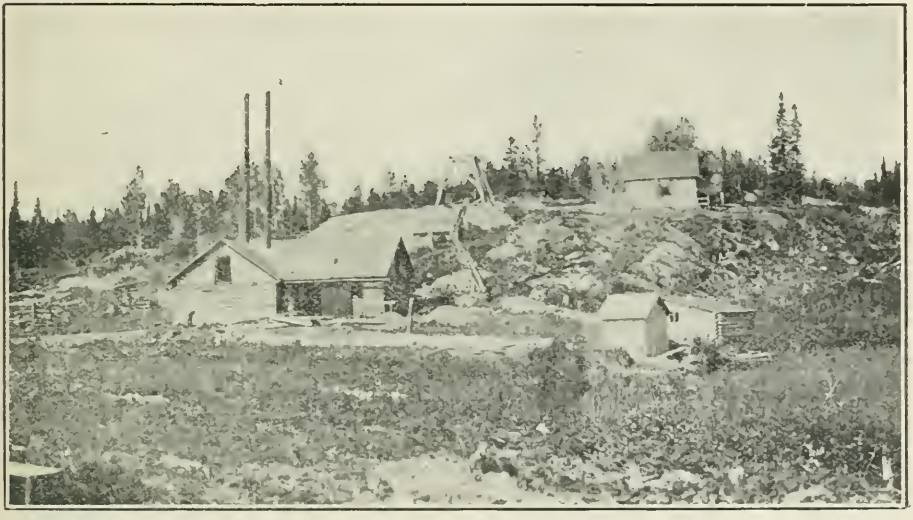
Considerable prospecting was done in the vicinity of Sturgeon lake during 1907.

St. Anthony Gold Mine

Chief among the properties operating was the St. Anthony gold mine. This mine has up to the present been compelled to take in supplies by a long canoe route from Osaquan on the main line of the Canadian Pacific railway. The Superior branch of the Grand Trunk Pacific railway passes within four miles of the south end of Sturgeon lake. This will necessitate a road of that length to the lake, from which place the Company's tug can haul the supplies direct to the mine. In 1907 the St. Anthony mine was closed down in the spring, but reopened in August with Mr. J. Steele in charge of operations.



Paymaster gold mine.



Victory gold mine, Upper Manitou lake.

No. 2 shaft on which the shaft house is erected, is sunk vertically to a depth of 100 feet. The vein dips to the west, so that at the 100-foot level a cross-cut of 30 feet was driven to intersect the vein. From here drifts have been run north 156 feet, where a raise has been put through to the surface. This drift has been extended farther north on the vein a distance of 33 feet and a cross-cut driven west 65 feet. To the south of the shaft a drift has been driven on the vein from the cross-cut south 67 feet, then east 35 feet and from here south 150 feet to the No. 3 shaft. During the last year an open cut has been taken out from the shore of Couture lake on the south end of the vein for a distance of about 150 feet, along the vein. This open cut at its north end is about 25 feet in depth and is in places 20 feet in width.

The plant consists of two 80-h.p. return tubular boilers, a 9-drill compound steam, duplex air compressor, with jet condenser, a 125-h.p. engine, small engine for electric light plant, and small engine for driving the machinery in the machine shop. The machine shop is fully equipped with lathe, planer, drills, etc. A 10-stamp mill has been installed with full equipment. The pulp from the plates is run over a Wilfley table and Frue vanner. The pumping plant to supply water for milling purposes is situated on the shore of Couture lake, consisting of a No. 5 Cameron, a Gardiner duplex and a small Northey. A hoist with 10 × 12-inch cylinders and 3-foot drum is used for hoisting from the main shaft.

The rock formations in the area adjoining the mine were described by Prof. Miller in the Twelfth Report of the Bureau of Mines. It has, however, been proved by development work in the mine that the granite contact with the green schists which cuts across the vein between No. 2 and No. 3 shafts, has a uniform dip to the east under the green schists of about 45 degrees.

Douglas Mine

The Douglas Mining Company were engaged in development work on their holdings, which include T B 5, 6, 7 and P 6 and 7. These locations lie east of Belmore bay, which is a bay off the northeast arm of Sturgeon lake. Mr. C. S. Gzowski is president of the company, Mr. Daggett, secretary-treasurer, and Jas. Atwood, manager.

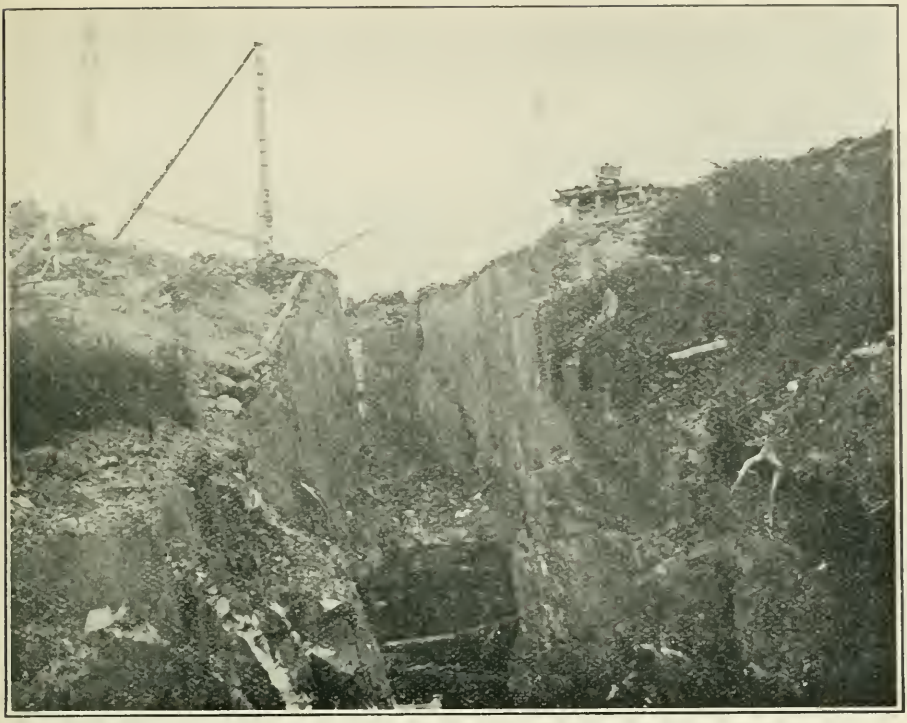
The Belmore Bay Gold Mining Company were engaged in the winter of 1906 sinking a shaft on H W 746 east of Belmore bay. At the time of my inspection in September, 1907, no work was being done at the property.

Northern Pyrites Mine

The Northern Pyrites Company were operating during 1907 an iron pyrites mine on locations H W 715 and 716, on the north shore of Big Vermilion lake. Access to the mine in summer time is by a 9-mile portage from Dinorwic to Big Sandy lake, thence by steamer across the lake 8 miles to Blackface portage, one-quarter mile in length, thence by steamer on lake Minnetakie 26 miles to the chutes, where there is a portage of 400 feet, thence by Abram lake to Pelican lake, and along Vermilion river to a portage three miles in length to the mine.

The main shaft has been sunk to a depth of 120 feet, with the first level at 86 feet. From the first level a cross-cut of 50 feet has been driven and a drift 25 feet in length. At the time of my inspection the shaft was being re-timbered. It was sunk in the hanging wall of the deposit, and the vein was cut at a depth of 80 feet, the vein dipping at 60 degrees. The best pyrites is found near the foot wall about 100 feet from the shaft. A pit sunk about 150 feet from the shaft shows pyrites of very high grade. The outcrop on the shore of the lake some 500 feet west was the means of making the discovery, the country being very heavily covered with subsoil. The vein strikes northeast by southwest.

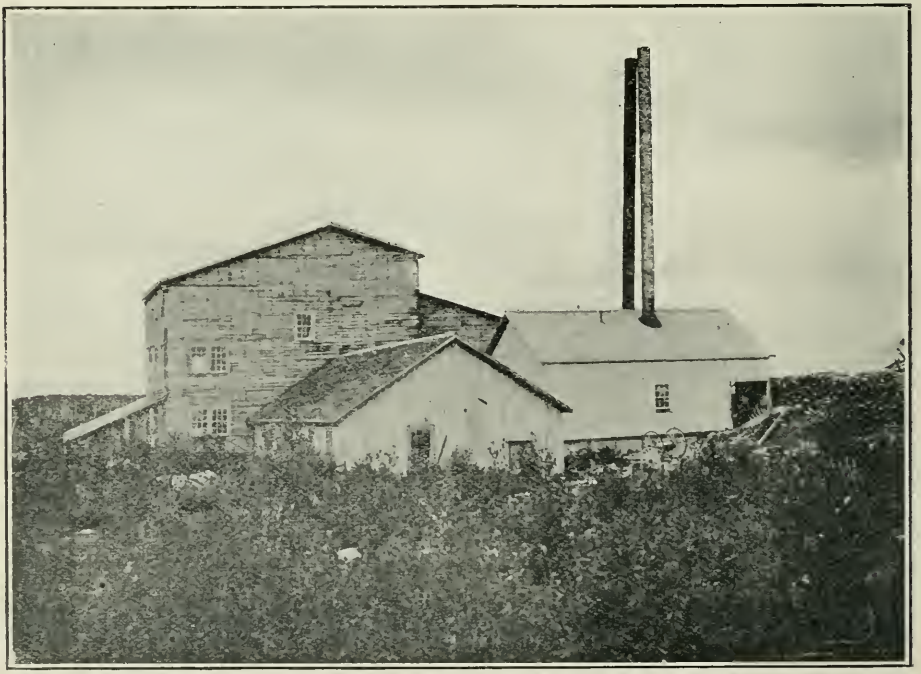
The power plant installed consists of two 60-h.p. locomotive firing boilers, the high pressure half of an air compressor developing about 400 cubic feet of free air per minute,



Open cut, St. Anthony gold mine, Sturgeon lake.

Shaft house, St. Anthony gold mine.

Camp buildings, St. Anthony gold mine.



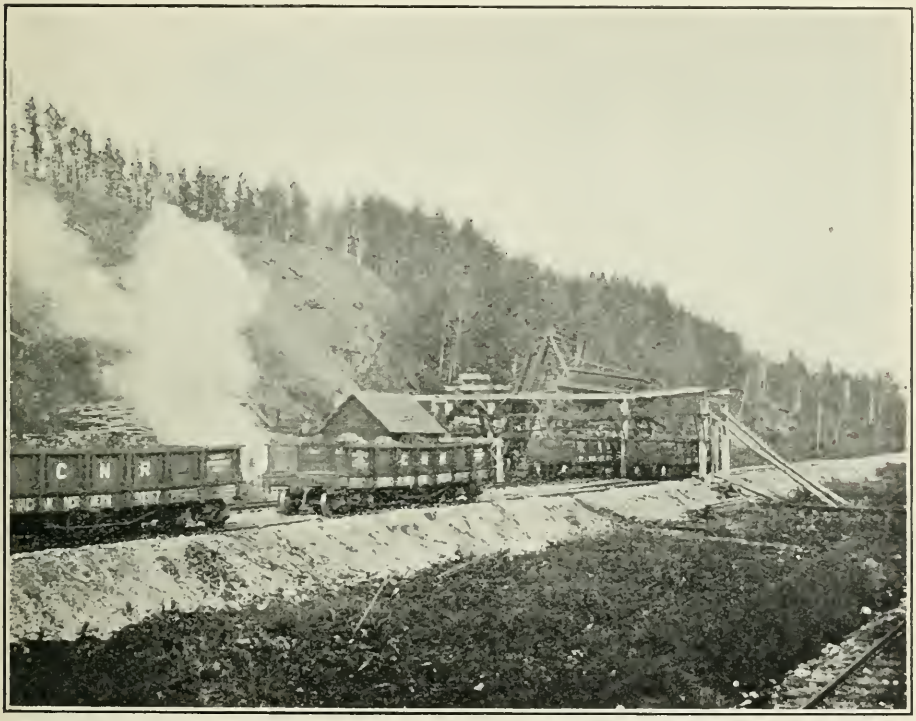
Power house and mill, St. Anthony gold mine.

and an 8¼ × 10-inch duplex cylinder hoist, 42-inch drum. A machine shop has been built east of the boiler house.

The vein occurs cutting the greenstone schist, the rock on the hanging wall side being very schistose in character, while on the foot wall it is more massive. The country being very heavily covered with bush, sand and gravel, with few outcrops, the work of prospecting is exceedingly difficult. A spur 3½ miles in length will be built from the main line of the National Transcontinental railway to the mine. Until this railway is completed the ore will be stock piled. Capt. J. Webb is superintendent in charge, employing a force of 40 men.

Atikokan Iron Company

At the time of my inspection in September, 1907, the Atikokan Iron Company's blast furnace at Port Arthur was in operation. The ore used was from the company's mine at Atikokan, and on account of its high sulphur contents is first roasted in a



Atikokan iron mine.

Roberts roaster, to eliminate as much of the sulphur as possible. The furnace gases are used as fuel in roasting the ore and a 24-hour roast is given. The limestone used is from Kelly island, lake Erie. One hundred bee hive coke ovens have been built, and produce about 95 tons of coke per 24 hours, which is used in the company's furnace. A full description of the furnace is given in Mr. G. C. Mackenzie's report on "The Iron and Steel Industry of Ontario," in the present volume.

Mr. R. R. Jones is superintendent of the furnace.

Atikokan Iron Mine

As mentioned in the Sixteenth Report of the Bureau of Mines, the Atikokan mine began shipping May, 1907. From 100 to 150 tons of ore per day were shipped regularly until the mine closed in November, 1907. During this time ore was taken from the main vein cut in the prospect tunnel. From this tunnel drifts were driven east and west on the vein and stoping was begun. A raise was being put through to the surface on the vein on the west side of the tunnel. No work was done on the 8-foot vein north of the main vein. East of the tunnel mouth the rock has been blasted down as far back as the ore body, and ore was stoped from this by means of open cut work. The ore from the tunnel and open cut is trammed out on cars and dumped directly into a large gyratory crusher, which reduces it to 2-inch size. The ore is hoisted after crushing by a bucket elevator, when it passes over a trommel and the fines are separated, the oversize going directly on to the 50-ton ore cars on the spur.

The plant at the mine consists of three 100-h.p. return tubular boilers and the high pressure half of a Rand air compressor, "B-3" class.

Mr. F. Rodda is superintendent of the mine and employed a force of 60 men at the time of inspection.

West End Silver Mine

This property was not in operation at the time of my inspection in December, 1907, but was kept unwatered. From the owners it was learned that it had been worked during the greater part of the year. The work done consisted chiefly in driving the headings and stoping on the fourth level east side of the shaft. Several shipments of ore were made during the year, consisting of first grade ore from the mine and concentrates from the mill.

Beaver Silver Mine

The work of pumping out this mine began in June, 1907, after sixteen years' inactivity. During this time all the machinery at the mine and mill had been removed or destroyed by fire, so that on the re-opening new buildings had to be put up and new machinery installed. The company operating the mine is the Beaver Consolidated Silver Mines, Limited, with Wm. Snider, vice-president, Harry C. Gibbs, secretary-treasurer, and A. L. McEwen, manager.

In addition to unwatering the mine some mining work was being done on adit No. 2 at a point about 100 feet from the main shaft, where the floor of the adit was being stoped out to a depth of about 15 feet. In the main shaft the timber in the first 75 feet is in very bad condition, and will have to be renewed before operations in the shaft can be begun.

A small 30-h.p. locomotive firing boiler has been put in and a No. 6 Cameron sinking pump is used for pumping out the shaft.

Mr. A. C. Debernardi is mine captain, employing about 10 men.

II.—Sudbury and the North Shore

Canadian Copper Company

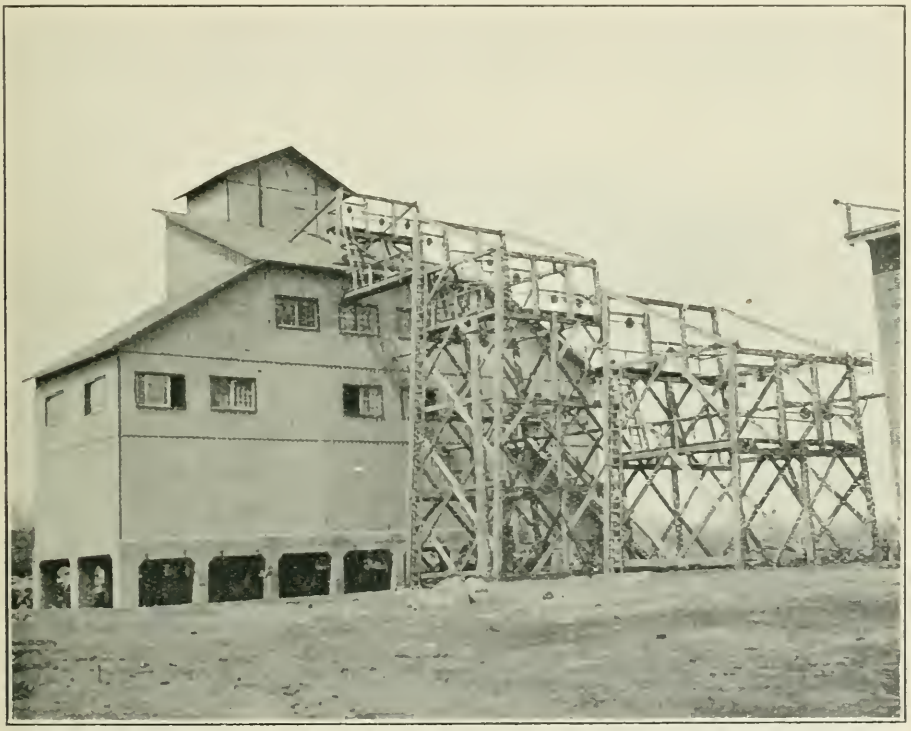
The Canadian Copper Company continues to operate its mines and smelting works for the production of nickel-copper matte, and was perhaps never in a better position to carry on its extensive business, as regards the condition and equipment of its properties, than it was last year.

Creighton Mine

In the Sixteenth Report of the Bureau of Mines a detailed description of the No. 2 rock house and power house at the Creighton mine was given. No change in the surface equipment has been made since that time, except the remodelling of the No. 1 shaft house.

No 1 shaft has been sunk to a total depth of 250 feet on an incline of 57 degrees, with levels at 75 feet, 150 feet and 210 feet respectively. The floor of the open pit is at the 150-foot level of the shaft. No. 1 shaft has been re-timbered throughout and a station cut at the third level. Sinking is also being continued below the third level

No. 2 shaft, 330 feet west of No. 1 shaft, has been sunk to a depth of 340 feet, with levels at 190 feet and 275 feet respectively. On the second level at 190 feet a cross-cut has been driven north 90 feet. From this point a drift has been made north 110 feet and east 175 feet. A raise has also been put through to the surface. Stoping has been begun from this drift 50 feet from the cross-cut, and an area on the level 75 feet in length by 60 feet in width has been stoped out. On this level the open pit, to which access is had by both the cross-cuts from No. 1 and No. 2 shafts, has been stoped by the overhand method, to an area on the level of 175 feet in width by 275 feet in length.



No. 2 shaft house, Creighton nickel-copper mine.

On the third level of No. 2 shaft at a depth of 275 feet a cross-cut has been driven north a total distance of 164 feet. At 95 feet from the shaft drifts have been driven east 111 feet and west 94 feet. Sinking in the shaft is being continued below the third level.

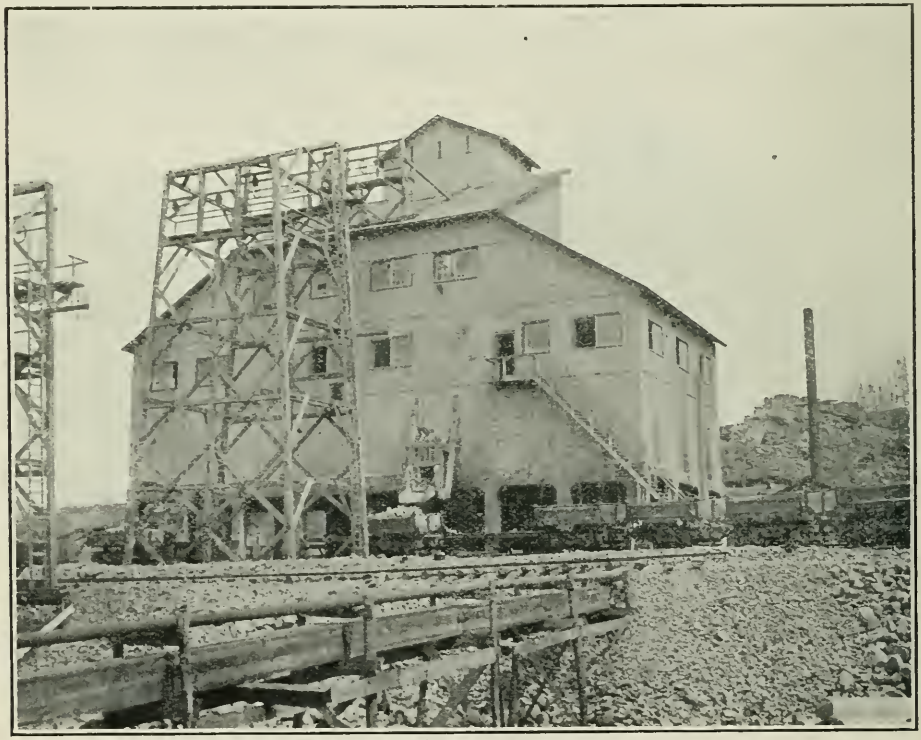
At the time of my inspection no ore was being hoisted from No. 1 shaft, owing to its being retimbered. About 500 tons a day were being hoisted from No. 2 shaft.

Mr. William Hambly is superintendent, employing a force of 150 men.

Crean Hill Mine

The Canadian Copper Company has, during the past year, been producing about 300 tons of ore per day from the Crean Hill mine. The shaft has been sunk on an incline of 57 degrees, to a depth of 400 feet, with levels at 60 feet, 120 feet, 180 feet, 275 feet and 375 feet. On the first level a cross-cut 65 feet in length has been driven to the ore body, which on this level is worked as an open pit. It is 60 feet in width

by 100 feet in length. From the shaft at the second level a cross-cut 90 feet in length has been driven to the ore body, which it cuts at its southern end. The ore has been stoped out on this level for 90 feet in width by 150 feet in length. At the centre of the deposit a pillar 40 feet by 25 feet has been left to support the roof. On the third level the cross-cut to the ore body is 90 feet in length. and the ore on this level has been stoped out for an area 60 feet in width by 150 feet in length. This third level floor has been stoped out, putting the third and fourth level stopes into one. The fourth level has a cross-cut from the shaft to the ore body 60 feet in length; and the stope is 75 feet in width by 125 feet in length; all the ore from the third and fourth level stopes being trammed from this level. A motor-driven station pump has been installed on this level. The fifth level, at 375 feet in depth, has a drift driven east 257 feet. A diamond drill station has been cut, and two diamond drills set to work to test the ore body at a greater depth.



Shaft House, Crean Hill nickel-copper mine.

At a depth of 200 feet in the shaft a dike was encountered cutting across the shaft at nearly right angles. The dike is 40 feet in thickness, and on each side of it there is from 6 to 12 inches of clayey material. The dike cuts through the ore body, but at the intersection it is mineralized and is stoped out as ore.

The rock house is similar to the No. 2 rock house at the Creighton mine, except that the ore is sorted on the crushing floor instead of being dumped directly into the crushers. On this floor all the rock is picked out. The mixed ore and rock is crushed, and the rock picked out on the sorting table.

The power house and plant is similar to that at the Creighton mine. A number of houses for the employees were built during 1907. Instructions were given regarding scaling and to have a railing placed around the open pit.

Mr. R. M. Meek is superintendent, employing a force of 400 men.

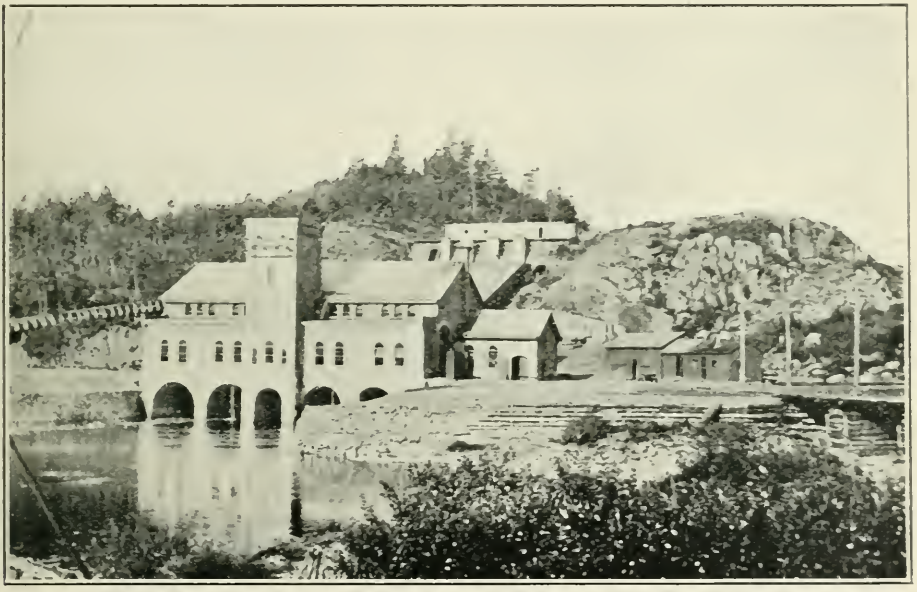
Quartz Mine

The quartz mine near Naughton is worked to provide sufficient quartz for the smelter requirements. At the time of my inspection the mine was not in operation, an adequate amount of quartz being on hand.

Cobalt Refining Plant

The plant of the Orford Copper Company for the treatment of Cobalt ores has been in operation continuously during the past year. The company treat here more particularly the higher grade ores from the Cobalt camp, although a small amount of the lower grade ores is also handled: altogether about 20 per cent. of the tonnage from the camp is treated here.

Some changes have been made in the treatment of the ores during the year, more particularly with regard to the speiss. A new furnace has been put in. The speiss, which originally was shipped direct from the blast furnace is now re-ground and



Canadian Copper Company's power house, High Falls, Spanish river.

roasted in the Edwards roaster,—which has been altered in form to be more applicable to the roasting of speiss,—and subjected to a leaching process. The silver bullion from the blast furnace is remelted in a small oil furnace and cast into bars of approximately 500 ounces in weight. Electric power has been installed at the plant, motors being used to drive all the machinery.

Mr. Mackenzie is superintendent of the plant.

Roast Yards

No. 3 roast yard, north of the town, has been greatly enlarged during the year. The ore from the Creighton mine is roasted, but that from the Crean Hill mine is smelted green. The Creighton ore is brought to the company's siding at the roast yards by the Manitoulin and North Shore railway. It is unloaded from the cars at the roast heaps by contract work, a certain price being paid for unloading the ore from the car and building the roast heaps. The roasted ore is loaded from the roast beds into

Ingoldsby drop bottom cars by a steam shovel and taken to the bins at the smelter from which the charging trains are loaded.

Three sintering furnaces have been put in operation on the site of the old west smelter, for the purpose of preparing the fines for use in the blast furnace. Old converter pots are used. A perforated bottom is placed in the pot and the fines mixed with a certain amount of coal, fired and a low blast turned on. The ore is roasted, and through the heat generated, the fine particles are cemented together, giving a product very adaptable for use in the smelter

Mr. E. W. C. Perry is superintendent of the roast yard and sintering plant.

Smelting Plant

A full description of the smelting plant was given in the Sixteenth Report of the Bureau of Mines. During the last year, however, it was enlarged by the installation of a converter blowing engine, rope-driven by an Allis Chalmers-Bullock induction motor of 1,250-h.p. capacity, working at 2,200 volts. To furnish this electric power an addition was made to the power plant at High Falls. The power house at High Falls was designed with space for four penstocks 9 feet in diameter, through which water enters to the turbines at a maximum speed of 7.2 feet per second. Two turbines designed for a maximum of 3,350 horsepower, each directly connected with a 2,000 kilowatt generator, were originally installed. During 1907 another turbine and generator were being installed which, when completed, will give a total power available of 7,500 h.p.

A converter building 280 feet long and 95 feet wide has been erected during the year with space for 10 converter stands, of which number 5 are at present installed. The four converter stands in the furnace building will be taken out to make room for two additional furnaces.

The relining department is a continuation of the converter department, and is 112 feet long and 60 feet wide, with a shed 35 feet in width on each side.

The following description[1] of the converting and relining plant is extracted from an article by the superintendent, Mr. David H. Browne:—

Back of this are the storage bins for quartz, clay and old linings with a floor space 60 feet by 60 feet, and behind this again the machinery for crushing and drying quartz and clay and elevating them to the storage bins. This occupies a floor space of 70 feet long by 60 feet wide. The total length of the building is therefore 522 feet.

Two Morgan electric cranes 55 feet 8 inches span with 50-ton main and 20-ton auxiliary hoist will be used to handle the shells in the lining and blowing rooms.

Furnace matte from the cupola building will be taken across on three tracks to the Bessemer department by means of motors. The matte pots will be lifted and poured by the electric cranes. Owing to the nature of the ground it is not possible to arrange the converter building on a lower level so that the matte can be poured direct from matte cars into the converters. These ten concrete stands are controlled by two pulpits, each handling five stands. The control is entirely electric. Each converter is operated by a 30-h.p. induction motor, with solenoid brake. This is directly connected to a bronze worm which, by two gearings, transmits the power to the drive trunnion of the converter.

The slag from the converters is to be poured into steel pots which are lifted by the crane and set on a slag car, on which it is taken out of the building and poured into a slag casting machine. The casting machine is a circular steel framework, 58 feet in diameter, resting on a circular track. On this framework rest cast iron moulds forming a continuous flat ring. Each mould is 12 inches by 30 inches by 4 inches, and holds about 150 pounds of slag. This ring is slowly rotated under the stream of slag poured down from the slag car. The slow rotation allows time for the slag to cool before the moulds reach a hand controlled tripper, which reverses the mould and drops the material into a hopper. Below this hopper a mine skip takes the slag, carries it up an incline track and drops it into a steel bin of 500 ton capacity above the charging tracks.

The converter matte will be handled in clay lined ladles by the cranes and poured into moulds under the shed roof. As soon as the lining of a shell is burned out the shell is lifted by the travelling crane and placed on one of the sculling cars which run on

[1] "The Mining and Smelting Equipment of the Canadian Copper Company."

standard gauge tracks from the main building out under the shed roof to the south side. The space between columns in the main buildings is filled with sheet steel doors of the roller blind type, which can be raised and lowered to allow the sculling cars to pass out. After the shells are sculled, the cars are pushed back, and the shells lifted by the travelling cranes and carried to the relining platform. Here they are dropped on cars at each side of a sixty-foot platform, twenty-five feet wide and ten feet high. This platform is in the centre of the relining department with space on each side for five relining cars. Down the centre of this relining platform run two narrow gauge tracks, which bring the mixture of quartz and clay from the Carlin mills.

The lining is done by ramming machines, which are handled by jib cranes, three on each side of the platform. The tops are to be lined by ramming around a mould instead of by hand, as at present.

As fast as the shells are lined, and the tops are replaced, the lining cars are pushed out under the shed roof, which lies at each side of the relining room. This brings the shells under a row of hoods and along side of a wood storage platform, from which the cordwood is handled for drying the lining.

When this has been completed, the cars are again pushed back to the lining platform, the shells lifted off and placed on the blowing stands by the travelling cranes, and the cars are ready to receive a fresh shell for lining. The motion of the drying cars back and forth from the lining platform is effected by ratchet gears on the cars.

The quartz and clay mixture for lining is made up in the crushing department, above which are the storage bins. These bins are of sheet steel and hang from the side and central columns in a catenary curve. There are six bins, one set of three on each side containing respectively crushed quartz, dry clay and old converter linings from the sculling shed. On each side below each bin-row are narrow gauge tracks on which run side-dump cars which gather the mixture of clay and quartz from the bins and dump it into the mills. These tracks are on platforms five feet above the relining platform level. The crushed mixture is taken from the mills by a plough attached to the side of each pan, which scrapes the mixture off the pan and delivers it into cars which run down the centre of the mill floor and out along the relining platform. In this way the usual wheel barrow work is avoided. Space is provided for six mills, three on a side, each mill being below the level of the tracks which bring the supply of quartz and clay, and above the level of the tracks which take away the crushed and mixed product to the lining platform.

At the rear of the bins and mills are the quartz crushers and clay driers. These occupy a floor space 60 by 70 feet. On either side of this end of the building are standard gauge tracks, on which quartz and clay are brought in. The clay is all passed through a Ruggles-Coles drier, which removes the moisture and rolls it into the shape of pellets. This is necessary in winter, in order to avoid freezing in the bins. During part of the summer drying is not required.

Mond Nickel Company

The Mond Nickel Company has now two shipping mines from which to draw its supply of ore. The Garson mine, in Garson township, began shipping on the completion of the spur from the Canadian Northern railway, Moose Mountain branch. The Victoria mine has been shipping steadily during the past year, but is somewhat handicapped at present owing to its inadequte power plant for handling the tonnage from its deeper workings. This is, however, expected to be remedied by the first of January, 1909, when its plant will be renewed, using electric power in place of steam.

The company is developing a water power in Lorne township, 9 miles southwest of Victoria Mines on the Vermilion river. At present about 1,200 kilowatts will be developed. Electrical machinery is being installed both at the smelter and at the Victoria mine. The management expects to have the new power stations at the smelter and mine ready for operation by the first of January, 1909.

Victoria Mine

The main shaft at the Victoria mine is now sunk to a total depth of 940 feet, being the deepest mine in operation in the Sudbury district. Work at the time of my inspection was being done on the sixth, seventh, eighth, ninth and tenth levels. The shaft has, during the last year, been sunk from the ninth to the tenth level, a distance of 150 feet. On the sixth level machines are at work, on the stope between the fifth and sixth levels on the east ore body. The ore is being trammed from this level. On

the east and west ore bodies, between the seventh and eighth levels, machines are at work stoping. The ore is trammed from the eighth level from the east ore body by means of a chute. On the ninth level a raise is being put through to the eighth on the west ore body. The work of cutting a station on the tenth level was in progress at the time of my inspection. No work is done on the upper levels during the winter time owing to the amount of ice that accumulates.

Mr. H. W. Hixon has resigned, and has been succeeded by Mr. C. V. Corless as manager. Mr. O. B. Hall has been made mine superintendent.

Garson Mine

This property, owned by the Mond Nickel Company, has been added to the shipping list during the last year, 200 tons per day being at present shipped by way of the Canadian Northern railway to Sudbury, and thence by Canadian Pacific railway to Victoria Mines. The ore is at present smelted without roasting, but preparations have been made for taking the ore from the siding at the smelter to the roast yards by the aerial tram.

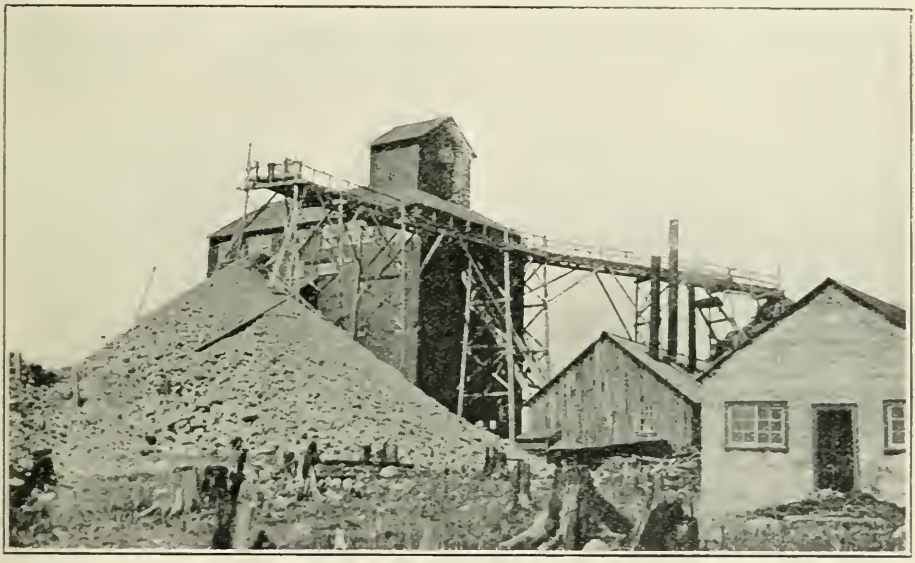
The underground developments at the Garson show the ore body on the first level at 100 feet in depth to be reached by the main cross-cut from the shaft to the drifts 80 feet in length. Drift 11 has been driven south 100 feet to number 11 ore body, which has been opened up by cutting a section with an area of 75 feet by 50 feet. A raise has been put through from this ore body to the surface. The main cross-cut has been driven 35 feet further to drift 12, which has been driven south to ore body number 12. The section of this ore body is 100 feet by 30 feet in area. Drift 13 to the north has been driven 75 feet towards number 13 ore body. Drift 14 has been driven north 240 feet to ore body number 14. This ore body has been opened up to an area of 75 feet by 40 feet, and a raise put through to the surface. No stoping has been done on this level as yet, except in cutting the section of each ore body. On the second level, at a depth of 200 feet, the cross-cut from the shaft to the drifts to the ore bodies has been driven 45 feet Drift 21 to the south has been driven to the south a distance of 130 feet, where the section of the ore body is being cut. Drift 22 has been driven north 100 feet to ore body 22, on which the section is being cut. From this ore body, drift 23 is being run to the northwest to cut the ore body. The third level, at a depth of 300 feet, has stations cut and drifting to the ore bodies has been commenced. The shaft was being sunk to the fourth level, a depth of 360 feet having been attained.

A shaft house has been erected having a height of 80 feet. The ore is hoisted in cars, holding approximately a ton of ore, on cages. It is then dumped over a grizzly on to a sorting floor, where the rock is picked out. On this floor are placed two jaw crushers, one for ore and the other for rocky ore. On the floor beneath are placed two bumping tables where the ore is again sorted. Beneath this floor are storage bins for ore and waste rock. The tracks of the Canadian Northern railway spur run beneath the rock house, and the ore is loaded from the ore bins direct into the ore cars. Four hundred horse power of electric energy is supplied by the Wahnapitae Power Company to the mine. An electric Lidgerwood pattern, double drum hoist, of 150-h.p. capacity and a compressor, belt-driven by electric motor of 150-h.p. capacity, developing power for 14 drills, have been installed. Electric pumps have been put in near the reservoir to supply water to the power house. The pumps underground are driven by air.

A large number of cottages have been built near the mine for the accommodation of the employees.

Mr. A. Sharp is resident superintendent. Instructions were given regarding cage and shaft openings.

Garson nickel-copper mine ; shaft and power house.



Garson nickel-copper mine ; nearer view of shaft house.

Cottages at Garson nickel-copper mine.

Worthington Mine

Work at this mine, which is situated immediately north of the track at Worthington station, C. P. R., was commenced again in September, 1907, after having been closed down since September, 1894.

The mine is mentioned in the First Report of the Bureau of Mines as having shaft No. 1 sunk to a depth of 35 feet, and shaft No. 2 to a depth of 95 feet. Very little mining work had been done in the mine since reopening. No. 1 shaft is 200 feet in depth with levels at 100 feet and 200 feet respectively. Both the first and second levels have been connected with No. 2 shaft by means of a short drift from the shaft to an open stope. This is on the east side of the shaft. A stope about 80 feet in length by 75 feet in height has been opened up, west of the shaft on the first level. On the second level west of the shaft, a drift has been run in about 35 feet where a section 25 feet by 25 feet has been cut, but no stoping done. Some mining work is being done on this level.

The old machinery, consisting of two boilers, straight line air compressor and hoist have been overhauled and put in working condition. Three cars of ore have been shipped to the Mond Nickel Company's smelter at Victoria Mines.

The mine was formerly owned by the Dominion Mineral Company. It is now being operated by the Mineral Development Company, with Jas. W Pyke, president, and F. C. Hirsch, manager.

The Whistle Property

This property is on lot 6 in the fourth and fifth concessions of the township of Norman. During the winter considerable diamond drill work was done, for the purpose of defining the ore body. With the completion of this drilling, work has been begun sinking a shaft. The property is about four miles from the Moose Mountain branch of the Canadian Northern railway, to which a spur will be put in as soon as the mine gets on a shipping basis.

Ontario Nickel Company

During 1907 considerable work was done by this company chiefly in building a refining plant about half a mile west of Worthington station. Some work was also done at the Totten mine. All work, both at the mine and refining works was stopped in the fall of last year.

Gold Mines

A number of gold mines and prospects, situated principally on the east shore of lake Superior, were under development for part of 1907. Mention is made of these as follows:

Shakespeare Gold Mine

The Shakespeare gold mine ceased operations temporarily in the fall of 1907, and had not, at the time of my inspection, been reopened. The development work described in the Sixteenth Report of the Bureau of Mines has been continued, but, on account of the mine being closed down, the extent of the same could not be ascertained.

Grace Gold Mine

The Grace gold mine, five miles east of Michipicoten River P. O., has been purchased from the Algoma Commercial Company, of Sault Ste Marie, by the LePage Gold Mining Company, Limited, of which Mr. Angus Gibson is manager. The mine was reopened in the fall of 1907, after having been closed for four years. Mining operations had, however, not begun at the time of my inspection in October, 1907. The development work at the mine, as described in the Twelfth Report of the Bureau of Mines, remains, therefore, the same.

On the development of electrical power on the Michipicoten river by the Algoma Power Company, the LePage Company contracted for 200 horse power, and commenced the work of installing electrically driven machinery at the mine, consisting of an air compressor, developing 545 cubic feet of free air per minute, belt driven by motor, 50-h.p. motor-driven hoist and 50-h.p. motor for driving mill machinery. The scarcity of fuel has always been a handicap to the successful operation of the mines in this section. With the development of electrical power this handicap is removed.

Golden Reed Mining Company

A number of prospects are being developed in the vicinity of the Grace mine. About three and a half miles distant from the Grace the Golden Reed Mining Company have sunk a shaft on a quartz vein to a depth of about 50 feet. The machinery for a 3-stamp Merrall mill has been purchased and was being forwarded to the property. Machinery for the use of electrical power is to be installed.

Braddock Development Company

In the vicinity of the Golden Reed property the Braddock Development Company have taken up mining claims numbers 380, 1568, 1239 and 379. A shaft has been sunk on one of these to a depth of 55 feet.

Copper Mines

With the decline in the price of copper in the fall of 1907, and the financial stringency in the United States and Canada, nearly all the copper prospects along the north shore of lake Huron were closed down. It is hoped, however, that during the next year considerable work will be done in opening up a number of them.

Hermina Mine

At this property work has been carried on continuously all winter. The shaft remains the same depth as at last inspection. No work has been done on the first level. On the second level at a depth of 220 feet drifts have been driven west 395 feet and east 260 feet. At 110 feet from the shaft a cross-cut 30 feet in length has been driven. On the third level at a depth of 320 feet a cross-cut has been driven east 60 feet and south 120 feet. From this drift, a drift and cross-cut have been driven north of east 80 feet. On the fourth level a cross-cut has been driven north 90 feet. From a point 60 feet from the shaft in the cross-cut, a drift has been driven east 100 feet, and from a point 70 feet from the shaft, a drift has been driven southeast 45 feet. A drift has been put in west from the main cross-cut a distance of 200 feet. The surface equipment remains the same as at last inspection.

A spur line from the Canadian Pacific railway is being built to the mine, a distance of four and a half miles. Part of the grading has already been done, and the work on the line is expected to be completed this year.

Mr. S. H. Bryant is superintendent of the mine, employing a force of 25 men.

The Algoma Custom Smelting and Refining Company, in which the officers of the Hermina Mining Company are chiefly interested, has erected a copper smelter at Thessalon. The smelter is situated one and a half miles from the railway on the lake shore. Docks have already been built, and it is expected that a spur from the railway to the smelter will be constructed this summer. The smelter is a custom plant, and contracts with some of the mines, particularly the Superior mine, to furnish ore, are under consideration.

Superior Mine

The Superior Copper Company has not been operating its mine since November, 1907. Up to that time development work on No. 6 shaft shows the following work done: The shaft has a depth of 400 feet with levels every 100 feet. On the first level 490 feet

of drifting has been done on the vein, which has a strike of northwest by southeast. A raise has been put through to the surface from the northwest drift. On the second level 240 feet of drifting has been done northwest and southeast of the shaft. On the third level there are 120 feet of drifting, and stoping has commenced. A raise has been put through to the second level. On the fourth level about 25 feet of drifting has been done.

The power plant consists of two 100-h.p. boilers, one 12-drill air compressor, one 150-h.p. engine and large single drum hoisting engine.

The grading on the spur line from the mine to the Algoma Central railway is nearly completed, when it is expected that the mine will begin shipping.

Mr. F. C. Smith is general manager of the company.

Campbell Copper Mine

During the last year Dr. D. Campbell has been developing a copper property consisting of 40 acres of the north half of lot 6 in the eighth concession of Plummer Additional, about one-half mile from the Sault branch of the Canadian Pacific railway, four miles from Bruce Mines and four miles from Desbarats. The vein, which has a strike of east and west, has been stripped for 125 feet, and consists of quartz carrying chalcopyrite along with several other ores of copper such as bornite, azurite and chalcocite. A shaft has been sunk south of the vein about 30 feet, to a depth of 50 feet, and a cross-cut driven north about 20 feet. A small upright boiler, hoist and drill have been used in the development work. The vein is in slate conglomerate about 30 feet from a diabase contact. The diabase occurs in the form of a dike with a width of about 125 feet cutting across the location in an east and west direction parallel to the vein. The pebbles in the conglomerate are mostly granite.

Reilly Prospect

On the south half of lot 7 and the west half of the south half of lot 8, in the third concession of the township of Johnson, comprising mining claims 745, 746, 747, 748, 743 and 744, Mr. J. F. Reilly is prospecting for copper. A large number of test pits have been sunk, the deepest being 25 feet. The ore where found consists of a chalcopyrite with occasionally a little bornite and malachite.

Iron Mines

Two of the most important iron ore deposits in Ontario are situated in this region, one being tributary to lake Huron, and the other to lake Superior. These are Moose Mountain and the Helen mine.

Moose Mountain

The Moose Mountain iron mine was not in operation at the time of my inspection, but the following notes on the development work, equipment and transportation facilities were obtained from the manager, Mr. N L. Leach:

Development work at the properties of the Moose Mountain, Limited, has proven the existence of several large deposits of merchantable ore, principally magnetite, and a small amount of hematite. The ores occur in the following rocks of the Keewatin age. Those in close proximity to the ore bodies consist principally of diorite, diabase, hornblende-schist and hornblende-gneiss, all of which may be collectively referred to as greenstone. In a few instances granite comes in contact with the ores. Numerous exposures of magnetic ores are to be found. Where weathered the ore presents gray, dark green and black appearances, and glaciated surfaces have the lustre of metallic iron. When crushed for shipment the ores have a steel gray appearance. These ores can be delivered to any blast furnace in Canada or the United States, tributary to the great lakes, and the product from the Moose Mountain mines will be disposed of in the above markets.

The present guaranteed analysis on ore sales is:

Iron	55.50
Phosphorus	.10
Silica	13.29
Manganese	.02
Alumina	1.21
Lime	3.60
Magnesia	3.15
Sulphur	.011
Titanium	None
Moisture	1.00

So far actual mining operations have been confined to the No. 1 or original Moose Mountain deposit. The surface of the ore body at this point is approximately 140 feet above the level of the railroad loading tracks. The ore is won by underhand stoping from an open face of 60 to 70 feet in height, and is trammed out to a large chute discharging thirty feet below the level of the bottom of the present stope into a No. 8 Austin gyratory crusher, which reduces it to a maximum size of five to six inches diameter. Leaving the No. 8 crusher the ore passes through a revolving screen 48 inches × 12 feet in size, with quarter-inch perforations, the rejections going direct to the foot of the elevator pit, and the balance to a No. 5 Austin gyratory crusher discharging into the 14 × 30-inch buckets of a 52-foot centre belt elevator, which elevates the ore into the loading bins, whence it discharges through hoppers into the railroad cars.

A 16 × 42-inch Jenckes Corliss engine, to drive the crushing plant, and two 150-h.p. return tubular boilers, constitute the present power plant, the machine drills having been operated by steam up to the present time.

Messrs. Mackenzie and Mann, appreciating the possibilities of the ore tonnage as a source of revenue for their railroads, became interested in the property, and as a result a branch of their Canadian Northern Ontario railway from Toronto to Sudbury, has been built from Sudbury north to the mines, a distance of 35 miles. A six-mile spur from the main line, a few miles south of the French river, has been constructed to the Georgian bay at a point known as Key Inlet, and is the final link connecting the mines with the great lakes, making a rail haul for the ore of about eighty miles, or about the same as the average haul of the three iron ore carrying roads of Minnesota

Ore docks for the transhipment of the ore are now under construction by the Mackenzie and Mann interests at the Key. A splendid natural harbor has been secured there with 24 feet of water alongside the ore docks, more than enough to float the largest vessels on the great lakes, and the Key as a shipping point by water is 500 miles nearer any of the iron ore receiving ports as compared with ports at the head of lake Superior. This will be a considerable factor in the securing of favorable lake freight rates.

The docks are of unique construction, and will be unlike any on the great lakes for the handling of iron ore. The ore from the mines, loaded in hopper-bottomed cars, is dumped from a trestle to a stock-pile ground beneath. Under this stock-pile ground, in line with the centre line of the trestle, is a tunnel through which a forty-two inch belt will convey the ore to a similar belt at the water's edge, which in turn conveys and elevates the ore to the dock trestle, sixty feet above the water level. It is then tripped off the belt, weighed by an automatic device, and dumped into pockets from which it will be spouted into the hold of the vessels alongside the dock. It is expected that these belts will have a capacity of 800 tons of ore per hour.

The Helen Mine

The Helen iron mine at Michipicoten was inspected in October, 1907. At that time the development work done since my former inspection consisted of No. 1 shaft being sunk to the fourth level, a distance of 60 feet below the third level, or a total depth of 346 feet. A drift has been driven from No. 1 shaft to No. 2 shaft, a distance of 100 feet, and a raise put up 30 feet for No. 2 shaft connection. A drift has been made 100 feet from No. 2 shaft to the ore body.

During the year all the ore shipped was stoped from the third level. The workings on the third level were described in the Sixteenth Report of the Bureau of Mines, and no new development work on this level has been since done, the work consisting of only working out the stopes that were blocked out.

A considerable tonnage of iron pyrites was shipped in 1907, taken from pockets of granular pyrites that occur in the northwesterly part of the mine, essentially in the form of chimneys in the iron ore.

During the season of navigation about 1,000 tons of iron ore per day were raised.

The mine is now equipped at the several levels with a mine telephone, which is connected on the surface with the shops, office and superintendent's house.

The attention of the superintendent was called to the need of very careful scaling of the stopes, particularly when they have reached the point at which they are nearly worked out, and openings are being cut between the main stopes; also to the necessity of seeing that the storage boxes for the day's supply of dynamite for the contractor are kept in drifts that are not being used for tramming, and that only a few boxes should be placed in the same drift.

Mr. C. B. Keenan is superintendent, employing a force of 150 men.

III.—Temiskaming

Northland Pyrites Mine

This property was described in the Sixteenth Report of the Bureau of Mines, as the James Lake pyrites mine. It was in continuous operation during the past year. The underground development shows the shaft to have been sunk to a depth of 170 feet with the first level at 100 feet. On this level drifts have been driven north 110 feet and south 260 feet. North of the shaft stoping has been begun, a stope 80 feet in length by 25 feet in height having been made. South of the shaft stoping has also been commenced, the ore being stoped out for an area of 80 feet in length by 20 feet in height. North of the shaft 240 feet the ore has been taken out by open cut workings for a depth of 45 feet by a length of 75 feet. This stope has been connected with the first level by a raise and stoping from the level begun. The ore is hoisted to the shaft house where it is broken and the rock cobbed out. It is then dumped direct from the storage bin to the cars, a siding from the Temiskaming and Northern Ontario railway having been built to pass under the ore bin.

The equipment consists of two 100-h.p. boilers and a 12-drill air compressor and hoist.

Mr. Ronald Harris is manager, employing a force of 35 men.

Temagami Mining and Milling Company

Work was carried on at this property during the year until April, 1908, when all operations ceased. During the period of activity an adit was driven into the hill on the vein and two shafts sunk to depths of about 50 feet.

Mr. R. Peverly was in charge of operations.

Silver Mines

A description of the working mines of the Cobalt camp will be found in chapter II of Part II of the Sixteenth Report of the Bureau of Mines.

In chapter III of the same Report Mr. C. W. Knight briefly describes the more important silver-bearing veins of the Montreal River area. No inspection was made of this area in 1907, as little active mining work had been done.

Two plants for the treatment of Cobalt ores have been recently erected in Ontario; one at Thorold and the other at Deloro, and are in active operation. A description of these plants is also given in Part II of the Sixteenth Report.

IV.—Eastern Ontario

Gold Mines

The gold mines of Eastern Ontario have had a varied and uncertain experience. During 1907 and the first part of the present year there have been in operation at different times six mines, namely, the Pearce, Sophia, Golden Fleece, Star of the East, Big Dipper and Boerth. All of these are properties on which work was formerly done,

and which have been closed down chiefly through lack of funds to carry on exploration. New companies have been induced to take over the properties, or a re-organization of the old company has taken place to provide further working capital which in most cases has proven insufficient. The mines in Eastern Ontario have this year been benefited by the falling off in the demand for labor, the laboring class being compelled to seek employment here where the wages are less than in the northern parts of the Province.

Star of the East

This mine was in operation at the time of my inspection in June, 1907, but ceased work during the year. During the time of its activity a test was made of the ore as to its value and milling properties under the direction of the superintendent Mr. Brooks

Golden Fleece

The Golden Fleece, situated on lot 25 in the sixth concession of the township of Kaladar, was in operation during 1907. The shaft was sunk to a depth of 85 feet vertically and about 50 feet of cross-cut driven. No development was done in drifting on the vein on the 85-foot level. During the year a 10-stamp mill was erected and a two weeks' mill run made. The ore milled was taken from surface workings.

Pearce Mine

The Pearce mine is located on lot 8 in the ninth concession of Marmora township, adjoining the Deloro Mining and Reduction Company's works. The mine is owned by the Cleveland Gold Mining Company, and is leased by them to Mr. H. E. Lawson, who is at present operating it. The shaft has been sunk on the vein on an incline of 26 degrees, to a depth of 173 feet, the first level being at 60 feet and the second level at 140 feet. All work is at present confined to the second level south drift, which has been driven 125 feet. The stope from this drift has been carried up on the vein to a height of about 45 feet with a length of 40 feet, at a distance of 75 feet from the shaft. A drift has been driven north from the level 105 feet. Drilling is done by means of steam, a fan being used for ventilation. A 20-h.p. boiler supplies power for hoisting, drilling and pumping. The lessee is personally looking after the work at the mine. This property has been closed down for some time and was re-opened by Mr. Lawson in October, 1907.

Boerth Mine

The Boerth mine has been closed down for some years, but work was begun again in the spring of 1908. The old shaft has not as yet been unwatered, work being confined chiefly to the prospecting of the veins on or near the surface. A shipment was made from the mine in May, 1908, for experimental purposes.

Big Dipper

The Big Dipper Mining and Milling Company which controls the mining rights on lots 4 to 21 in the tenth concession of the township of Barrie, Frontenac county, have again begun operations. The work is being done chiefly on lot 4 in the tenth concession, under the management of Mr. J. Jamieson.

Sophia Mine

The Sophia mine, consisting of the west half of the east half of lot 14 in the tenth concession of the township of Madoc, and the west half of the east half of lot 15 in the same concession, has been taken over by the Madoc Mines Company from the original owners. The president of the new company is Geo. F. Adams of Auburn, N.Y., with W. C. Jirdinston, as manager.

The mine is described in the Tenth Report of the Bureau of Mines, page 117. At the time of my inspection, June 27th, 1908, the No. 3 shaft was being unwatered. No other work has been done on the property with the exception of putting the mill in shape for operation.

Eldorado Copper Mine

No work has been done at this mine since last inspection, and the description of the mine in the Sixteenth Report of the Bureau of Mines gives the extent of the working up to the present. A change in the management took place last year, and it was the intention of the new management to begin work at once. The drop in the price of copper, together with the general inactivity, has caused the mine to lie idle up to the present.

Lead Mines

The revival of lead mining in Eastern Ontario caused to some extent by the high price of lead, suffered a severe set back in 1907. The Stanley Smelting Company, who were operating three lead mines and one small lead stack, got into financial difficulties and were consequently compelled to cease operations. As a result at the present time all the lead properties in Ontario are lying idle.

Richardson or Olden Zinc Mine

This mine was closed down during the winter of 1907, but work was resumed at the mine on a small scale during the spring of 1908. Work has been confined chiefly to Nos. 1 and 2 shafts. The higher grade ore extracted is hand-jigged, and the lower grade ore put on the dump for future treatment. Mr. J. Sullivan is forman in charge.

Iron Pyrites

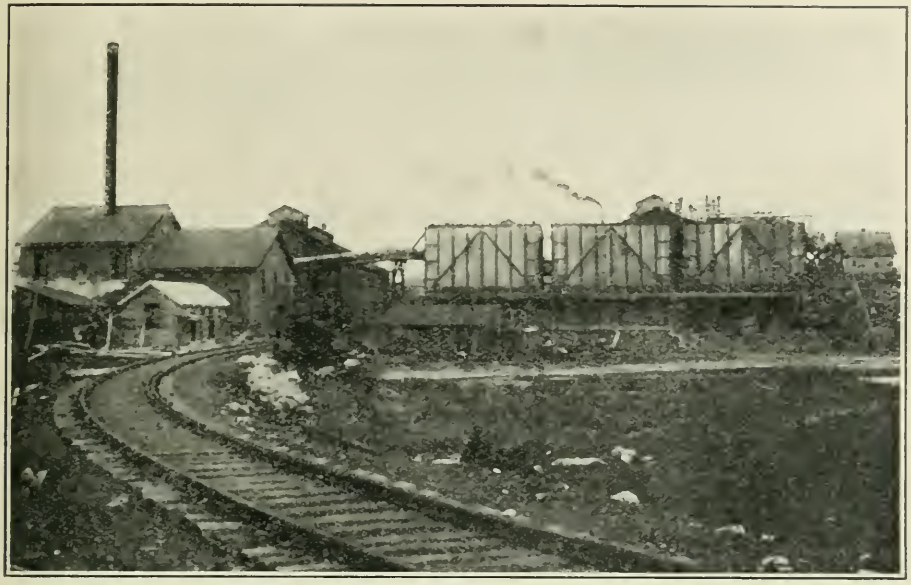
The Hungerford mine was the only pyrites mine in operation in eastern Ontario at the time of my inspection in June, 1908. There are, however, a number of prospects having fairly good possibilities which have shipped some ore.

Hungerford Mine

The Hungerford mine, owned by the Nicholls Chemical Company, is situated on lot 23 in the twelfth concession of the township of Hungerford, and within an eighth of a mile of the Canadian Pacific railway station known as Sulphide. The shaft is the same depth as at last inspection. On the 100-foot level north vein the drifts on the vein have been extended to 240 feet east and 250 feet west of the cross-cut.

No additional work has been done on the other vein on this level. On the 200-foot level drifts have been driven on the north vein from the cross-cut 240 feet east and 250 feet west. A raise has been put through from the level near where the cross-cut strikes the vein, to the first level. Chutes have been made at intervals of 50 feet along the vein for 300 feet. In place of the ore being stoped out between the chutes along the vein and timber put in, the ore has been left as pillars and the chutes have been connected overhead. The ore has been broken down in the stope for 300 feet in length and to within an average of 35 feet from the first level. Only sufficient ore has, however, been drawn from the stope to provide working room. Development work produces almost enough ore to keep the furnaces running. On the third level a drift has been driven east on the south vein a distance of 225 feet. On the north vein drifts have been driven east 360 feet and west 240 feet from the cross-cut. A raise has been put through from the third to the second level, and a winze has been begun on the north vein 50 feet from the cross-cut.

The acid works are located about 800 feet south of the mine, and treat about 750 tons of ore per month. They have been in operation since July, 1907, and were



Acid Works, Nichols Chemical Company, Sulphide.

Acid Works, Nichols Chemical Company, Sulphide—another view.

described in the Bureau's last Report. The power plant in the acid works consists of two 125-h.p. return tubular boilers with Cochrane feed water heater. A large underwriter fire pump and electric light plant are installed in the power house. An electric pump is to be installed at Black creek near the mine for pumping water to the artificial reservoir between the mine and works. The power plant at the mine consists of two 100-h.p. boilers and two compressors, having a capacity of 400 and 500 cubic feet of free air per minute respectively.

Mr. F. W. Lovejoy is superintendent of the mine and works, employing a force of 65 men.

Canada Mine

The Canadian Pyrites Company during part of 1907 was working this mine, which is on lot 26 in the twelfth concession of Hungerford, adjoining the Hungerford mine. It is at present closed down, but during the last winter some shipments of pyrites were made to the Nichells Chemical Company at Sulphide. A diamond drill was also at work part of the year testing the vein.

Mr. W. A. Hungerford is superintendent.

Iron Mines

The production of iron ore from Eastern Ontario at the present time amounts to about 8,000 tons per month, with prospects of soon being largely increased. It comes from the Wilbur and Mayo mines and is all magnetite, no hematite being at present produced. All the ore from these mines is shipped to Canadian furnaces at the Sault, Midland and Radnor, Que.

Wilbur Mine

The Wilbur iron mine, situated two miles south of Lavant station, on a spur line of the Kingston and Pembroke railway, has been taken over from the original owner, Mr. Wm. Caldwell of Toronto, by the Wilbur Iron Ore Company, and has been operated by them since October, 1907. During the winter the stock pile at the mine was shipped to the Sault and a new shaft house and ore bins built. All the work in the mine is carried on from the new shaft, which is south of the old working and is sunk on the ore body at an angle of 27 degrees following the dip of the ore. The shaft is 226 feet deep, and has levels driven every 50 feet. Most of the work at present is being done on the 50-foot and 100-foot level. On the 50-foot level drifts have been driven north and south from the shaft, 90 feet and 75 feet respectively, and the ore is being stoped out from above these drifts. On account of the flat dip of the ore body, the levels have to be carried very close together, and a great deal of the ore must be handled a couple of times before it can be loaded in the cars on the level. Pillars are being left at intervals of 25 to 30 feet to support the hanging wall.

On the second level drifts have also been driven north and south, and stoping is at present being carried on above the north drift. Other drifts have been run by the former owners at other parts of the shaft, but no work is at present being done in any of them. The ore is hoisted by means of a ton skip, and is dumped directly into the skips from cars on each of the levels. Thawing the dynamite is done in one of the old drifts, some distance from any of the present workings.

The ore dumps from the skip directly into a jaw crusher, and is hoisted by bucket elevator to a 50-foot picking belt, where a number of boys pick out the rock. The belt also acts as a conveyer to the several ore bins. These are built over the railway track and the ore is dumped directly from the bins on to the cars. The hoisting engine is placed in the rock house beneath the crusher. An additional plant has been installed consisting of a 125-h.p. return tubular boiler and a straight line compressor, placed in the old power house north of the shaft house.

Mr. Dunbar is president of the company, and Mr. A. Hesselbring, superintendent, employing a force of 65 men.

The upper part of the old workings of the mine is in a very unsafe condition, but no work is being done near it. The ore is magnetite, and has a strike on its outcrop of north and south, with granite as the hanging and crystalline limestone the foot wall. All the output is shipped to the blast furnace at Sault Ste. Marie, Ontario.

Radnor Mine

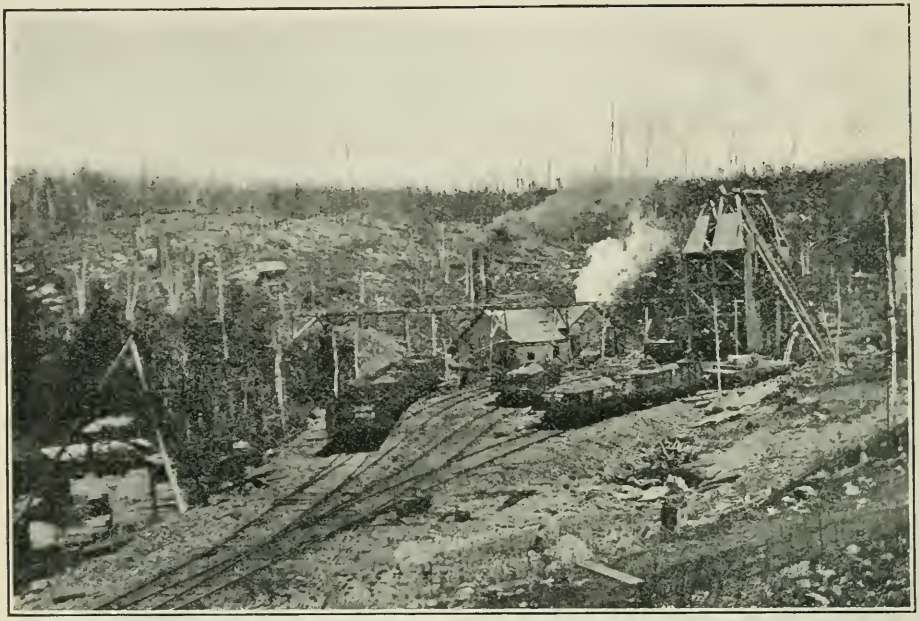
The Radnor mine, four miles from Caldwell station on the Canada Atlantic railway, and owned by the Canada Iron Furnace Company, was in operation during the greater part of 1907. Work at the mine was suspended in the fall of that year. The work done consisted chiefly in open cutting the deposit on the northwesterly side of the hill. Mr. L. L. Bolton was superintendent in charge.

Wilbur iron mine.

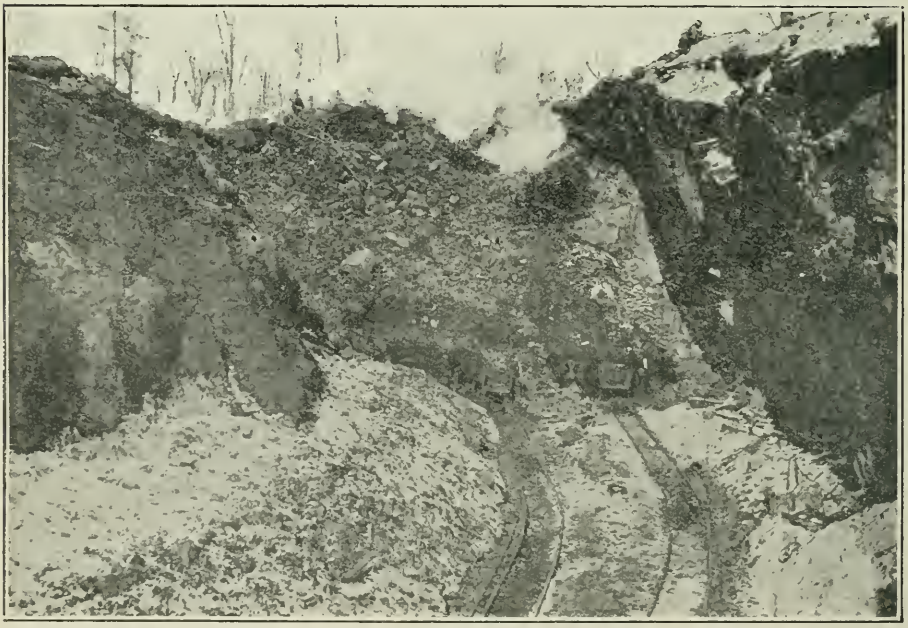
Mayo Mine

This property has been described in former reports of the Bureau of Mines as the Mineral Range mines. The Mineral Range Iron Mining Company have leased their holdings to the Canada Iron Furnace Company, and the mines are at present being operated by the latter. The ore is hauled by the Barry's Bay and Bessemer railway from the mines to their siding on the Central Ontario Railway, one-half mile south of L'Amable station. The Canada Iron Furnace Company began operating the mines in February, 1908, with Mr. J. G. Harris as superintendent. Three diamond drill holes have been put down to test No. 4 deposit, one hole being put down to a depth of 350 feet.

At No. 4 mine a three-compartment shaft has been sunk to a depth of 75 feet on the ore body at an angle of 67 degrees. A station has been cut at the 50-foot level and drifts run west on the ore body 25 feet and east 20 feet. One skip track has been put down to this level, the other track being only to the level of the open cut at present. From the 50-foot level the shaft will be sunk vertically, the ore body having been proved



Mayo iron mine No. 4.



Mayo iron mine No. 4, open pit.

to have less of a dip at depth than is shown in the first 50 feet. The open cut described in the Sixteenth Report of the Bureau of Mines has been continued from the shaft for a distance of 250 feet, where the ore is mixed with considerable rock. The face of the open cut here is 50 feet in width and 30 feet in height. A winze is being sunk in the floor of the open cut 100 feet from the shaft. This will connect with a raise from the west drift on the 50-foot level. The hanging wall of the ore body consists of a hornblende schist three feet in thickness, followed by crystalline limestone. On the foot wall is found a few feet of hornblende schist, then some lean ore, followed by a small thickness of hornblende schist lying on the granite.

The skip track has been renewed and new 2-ton skips put in use. The waste rock is hoisted by skip and dumped on cars in the shaft house below the crusher. The ore is dumped directly from the skips into a Gates gyratory crusher. The company purpose erecting ore bins and using picking belts. The machinery at present installed consists of two 80-h.p. locomotive firing boilers, a double drum hoist with cylinders 12½ × 15-inch, and a straight line air compressor. Two 125-h.p. return tubular boilers and new compressor are under order.

At No. 3 ore body a shaft has been sunk 25 feet deep at a point between two lenses of ore. The shaft will be sunk to greater depth and the ore bodies connected with the shaft and all hoisting from both ore bodies done from the one shaft. The west body has been opened up to an area of 35 feet wide by 40 feet in length, and about 25 feet in depth. The east body about 65 feet east of the west body, is opened up for 40 feet in length by 20 feet in width. A head frame has been erected at this shaft, and the ore is hoisted by skip and dumped directly on to railway cars on the siding. The single drum hoist formerly in use at No. 4 mine is now in use at this shaft. A small boiler furnishes steam for the hoist and for pumping. A 4-inch pipe line from the compressor at No. 4 mine has been laid to No. 3, to furnish the drills with power. This pipe line is 2,000 feet in length.

No work has been done by the present operating company on any of the deposits of the Mineral Range Iron Mining Company except Nos. 3 and 4.

Corundum

The corundum industry in Hastings and Renfrew Counties received a severe set back about the first of the present year by the closing down of the Canada Corundum Company, the largest corundum producer in Ontario. During 1907 the Company produced a considerable tonnage of marketable corundum.

The same system of open cut workings for mining the corundum bearing rock was continued as in former years, and a much larger tonnage was put through the mill each month. Mr. H. E. T. Haultain was general manager of the company up to the time of the mines closing down. During this year the company have been selling the corundum which they had in stock.

The Ashland Emery and Corundum Company operating in Carlow have been doing some prospecting during the year and also making some mill runs. A few shipments of corundum have been made, but operations have been carried on on a small scale. Mr. W. Mackie is in charge.

Feldspar

Frontenac county in 1907 as in former years produced all the feldspar that was shipped from Ontario.

Richardson Mine

The Richardson Mine in Bedford township produced the greater part of the feldspar that was mined in Ontario last year. All of the feldspar produced is shipped to the United States.

Pits Nos. 1 and 2 at the Richardson mine were worked in 1907 as formerly described. The pit now has a depth from its highest point of 90 feet. The sump at the centre of the two pits has been deepened and stopes are carried back from this sump to the limit of the productive zone. The quartz which occurs between the Nos. 1 and 2 pit and overhanging the feldspar of No. 2 pit has been mined to ensure greater safety for the workings, and shipped to the smelting works at Welland to be used in the manufacture of ferro-silicon.

Mr. M. J. Flynn is superintendent of the mine, employing during the summer 40 men.

Border Mine

The Border mine in the township of Portland, two miles east of Verona, was in operation a part of 1907. Work at the mine has, however, not been resumed this year.

Graphite

The graphite industry in Eastern Ontario received a stimulus during the first part of 1908 with the re-opening of the mine and mill at Port Elmsley and at the Black Donald graphite mine near Calabogie. New processes for the separation and refining the graphite are to be used, and good progress may be looked for.

Black Donald Mine

The Black Donald graphite mine, which has been held on sub-lease from the Ontario Graphite Company, has been transferred from the lessees to the Black Donald Graphite Company. The mine had not been unwatered at the time of my inspection, but the mill was being renovated and machinery installed similar to that in use in large graphite mills in the Eastern States. It is the intention of the management of the new company to begin mining operations as soon as the mill is ready to handle the output.

McConnell Mine

The Globe Refining Company has begun active development at the McConnell graphite mine in North Elmsley township at Oliver's Ferry, about 7 miles from Perth. No underground work had as yet been done at the time of my inspection, May 23rd, 1908, but there had been considerable surface trenching, and three diamond drill holes had been put down to test the extent of the deposits. A shaft house was being erected, and an inclined skip track was being built into the mine at an angle of about 45 degrees, this being the dip of the veins so far as yet determined. The skip will dump into a storage pocket in the shaft house, and the ore will be loaded from this pocket on wagons of about 4 tons capacity and hauled to the mill at Port Elmsley, two miles distant.

The workings up to the present consist of an open cut about 100 feet long and 25 feet deep. The graphite occurs in the form of flake graphite in limestone, the mineralized zone occurring in the crystalline limestone and having an easterly and westerly strike.

The concentrating and refining mill is situated at Port Elmsley on the river Tay, where a small water power has been developed. The ore is dumped from the wagons from a trestle at the mill by means of a tilting platform. It is then crushed by means of jaw crushers and rolls, and fed to a wet concentrator consisting of a revolving screw working against a current of water. Thence the graphite is taken to a revolving dryer and sized by means of screens. It is afterwards ground by mill stones to the requisite fineness. The produce is nearly all flake graphite.

Mr. R. McConnell is manager for the company, and Mr. J. Lattrell superintendent of the mill. A force of 40 men are employed at the mine and 15 men at the mill, a number of these being employed on construction work. An auxiliary steam plant is being put in at the mill.

Mica

The market for mica depends directly on the demand for electrical machinery. Although some mica is used for other purposes, still probably 90 to 95 per cent. of the mica produced in Ontario is used in the electrical trade. In consequence the market fluctuates with the fluctuations in the financial world on which the building of electric railways, and the installation of large electrical development plants depend. With the depression of 1907 all new work in the large electrical manufacturing companies was cancelled. As a result the demand for mica suddenly ceased, and consequently prices dropped. A number of the producers were also unable to get their money for the mica they had sold for some time before the depression. This necessarily caused the closing down of most of the mines, and a decreased production from those mines which remained in operation. That the effect on the industry was marked is shown by the fact that while in January, 1907, there were employed in the city of Ottawa about 1,500 hands at the several mica works, in January, 1908, there were probably not more than 100 at work.

Hanlan mica mine.

Lacey Mine

The Lacey mine, situated in Loughboro township about 4 miles from the village of Sydenham and owned by the Loughboro Mining Company, a subsidiary company to the General Electric Company, has remained in operation during the year. Very little new work has been done beyond that described in the last Report of the Bureau of Mines. The working faces are all being continued, and the lower workings of the mine are being thoroughly stoped out. As the working stopes are finished, the waste rock is dumped into them. A new deposit has been opened up in the footwall side of the old workings. A cross-cut has been driven to this body from the third level a distance of 60 feet. On this body of mica which is largely milky mica, a drift has been run southeast a distance of 35 feet. The deposit is parallel to the main body. As mentioned in the last Report a shaft is being sunk on the vein about 25 feet from the air shaft. A raise is also being driven up on the vein to connect with this shaft. The mica is rough cobbed at the mine and shipped to the General Electric Company's mica trimming works at Ottawa.

Mr. G. W. McNaughton is manager, employing a force of 25 men.

Hanlan Mine

The Hanlan mine, situated on lot 11 in the sixth concession of North Burgess and owned by the Loughboro Mining Company, has been in operation during all the year. The workings have now attained a depth of 140 feet with a length of 150 to 200 feet. Pillars are left at intervals for a support to the walls, and stulls heavily lagged are put in about every 25 feet as a further protection to the workmen. A drift is being driven from the bottom of the shaft along the vein to the west, which consists of pink calcite carrying some mica crystals. No exploratory work has hitherto been done on this side of the shaft. Some diamond drilling was done during the year with the view of testing the continuity of the deposit. The mica is rough cobbed at the mine and shipped to the General Electric Company's mica trimming works at Ottawa. A new 80-h.p. return tubular boiler was installed during the year.

Mr. G. W. McNaughton is manager, and Mr. S. Cordick superintendent, employing a force of 20 men.

Smith Mine

The Smith mine, situated on lot 13 in the fifth concession of the township of North Burgess and owned by the Dominion Development and Improvement Company, is a producer both of mica and apatite. The mine has been in operation during the year, and the pit has been sunk to a depth of 65 feet following the mica. The first 25 feet of the pit is vertical, from which point it has a dip to the west of 45 degrees. No uniform system of development has been followed, the mica occurring through the apatite and calcite so irregularly that the workings have merely followed the pockets. The workings near the bottom of the pit are about 24 feet in length by 12 feet in width. About 50 feet from the surface a pocket of mica has been followed to the north a distance of 30 feet from the main pit. A small boiler supplies power for the drill and hoist. The pit is remarkably dry, only a couple of buckets of water per day being hoisted.

Mr. Edward Smith is manager, employing a force of 15 men.

Mica Prospects

Messrs. Sewell and Smith are prospecting lot 13 in the seventh concession of North Burgess. A pit 20 feet deep has been sunk and some mica taken out. Some 6 men are employed under Mr. Terry Smith.

Messrs. McConnell and Watts are prospecting lot 12 in the sixth concession of North Burgess. The work consists chiefly in trenching.

The Brockville Mining Company mined on lot 7 in the sixth concession of Bastard township about three miles from the town of Elgin during part of the year. The pit has been sunk to a depth of about 100 feet following the dip of the vein, and has a length of 40 feet. The mica was rough cobbed at the mine and shipped to the Company's trimming works at Brockville for preparation for the market.

Messrs. Stoness and Kent were working a property on the west side of Bobb's lake during the summer. Considerable prospecting was being done in addition to working in the main pit, which is 75 fet deep by about 30 feet in length at the bottom. The mica is rough cobbed at the mine and shipped by way of Olden on the Kingston and Pembroke railway to the Kent Bros' mica works at Kingston.

Mr. J. Stoness is manager, employing about 15 men.

On lot 7 in the ninth concession of Loughboro township, the New York and Ontario Mining Company were engaged during part of the year in working a small deposit of mica known as the Freeman mine. The pit is about 60 feet deep and 40 feet in length, and has been worked as an open cut. Mr. S. Orser is superintendent in charge, employing a force of 10 men. The mica is rough cobbed and trimmed at the mine.

On the lot adjoining the Freeman mine Mr. H. Amey has been engaged part of the year in developing a mica deposit. No work was being done on it at the time of my inspection.

Mica Trimming Works

The General Electric Company's mica works are located on the corner of Bridge and Albert streets, Ottawa. The mica is obtained from the mines belonging to the Loughboro Mining Company. About 50 hands are employed at present.

The Laurentide Mica Company's factory on the corner of Queen and Bridge streets, Ottawa, was closed down during the winter, but has been reopened and at present employs about 30 hands.

Eugene Munsell and Company's works are situated at 400 Wellington street, Ottawa. At present they are doing but little.

Henderson talc mine.

The other companies engaged in this business in Ottawa and who buy mica from the small producers, are the Wallingford Mining and Mica Company on Sussex street; R. Blackburn, Sussex street; Webster and Company; and the Comet Mica Company, Wellington street.

Kent Bros. of Kingston have their works on Brock street in that city, and obtain their mica chiefly from their own mines.

J. Adams of Perth has a mica trimming shop and employs a few hands.

Marble

A new marble quarry has been opened up two miles south of Bancroft by Mr. T. Morrison. Machinery for quarrying the marble is to be installed at once.

Talc

The Henderson talc mine on lot 14 in the fourteenth concession of the township of Huntingdon was in operation for about two months in 1907, and operations have again commenced this year. The crude talc was formerly shipped to the United

States, but during this year a contract has been made to supply their talc to a mill being erected at Madoc by Mr. Gillespie, which will have a capacity of about 20 tons per 24 hours. Several grades of talc will be prepared for the trade, the market being looked for in Canada. The talc is first ground by means of a gyratory crusher, which reduces the talc to about 5-mesh. It is then passed through pulverizers, which will finally reduce it to 200-mesh. The mill is being erected near the Grand Trunk station at Madoc, the mine being distant about one mile.

The open pit at the mine is now 100 feet deep, the pit being 60 feet long and an average of 22 feet wide. Drifts have been run from this bottom level northeast 25 feet and southwest 15 feet. A new shaft is to be commenced this summer 50 feet southwest of the open cut and on the vein, and all work done from this shaft in future, the old open pit being unsafe.

Mr. S. Wellington is in charge, employing a force of 10 men.

GEOLOGY OF THUNDER BAY—ALGOMA BOUNDARY

BY ARTHUR L PARSONS

On June 4, 1907, the writer received instructions from Thos. W. Gibson, Deputy Minister of Mines, to accompany Mr. Alexander Niven, O. L. S., in his survey of the boundary line between Thunder Bay and Algoma, and to report on the geology, timber and agricultural resources of the country to be traversed. A canoe and camp equipment was provided by the Bureau of Mines, and Mr. A. C. Mitchell was employed as canoeman, in which capacity he rendered most efficient service on the trip. The next day we left Toronto and went to White River on the Canadian Pacific Railway, reaching that station June 6th. That same day in company with Mr. Niven's party, we moved the camp equipment to the beginning of the line at a point about three miles west of White River.

The Route

The original plan for the geological work was to follow the water courses from Montizambert in to the line, but on consultation with Mr. Niven it seemed better to follow the line in order to get a cross section which would permit of the rock outcrops being definitely located with respect to some given point. An additional incentive for going along the line rather than going up White lake from Montizambert was that the geology around White lake has already been mapped [1] and outcrops on this lake have been described and referred to the Huronian. Other outcrops of similar material were mapped at the same time on Kabinakagami lake, and it seemed probable that these rocks would be found on the line.

Inasmuch as the canoe which was provided did not arrive at Montizambert until Saturday, June 8th, and could not be brought to White river until the following Monday, delay was experienced in starting, and Mr. Niven's party was a day's trip ahead of us. The route followed was along the line for the first four miles, and in making the trip three small lakes near the two-mile post were explored. At four miles twenty-two chains the writer left the line and went to a lake about fifteen chains east of the line. The country in the first four miles is exceedingly rugged so that considerable time was lost, and on reaching the lake at four miles twenty-two chains we were about two days and a half behind Mr. Niven's party. In exploring this lake an outlet was found flowing to the north and as a river flowing from the east into Quinquaga lake had already been mapped, it seemed best to follow this outlet rather than the line. After four days' hard work we overtook Mr. Niven's party on Quinquaga lake where we camped with him near the fourteen-mile post that night. This watercourse is the worst canoe route that has been seen by the writer, and inasmuch as it was blocked by logs and alders so that it was necessary to cut a passage for the canoe, it is probable that the writer is the first white man to have gone down this creek, at least in the summer time. In these four days ten portages were cut, which varied in length from two chains up to half a mile.

After camping with Mr. Niven, the following day was devoted to exploration of the south end of Quinquaga lake; the next day the north end was examined, and we then proceeded by the outlet to the line. From this point the writer accompanied Mr. Niven's party to Obakamaga lake and examined the shores of all the lakes en route for outcrops of rock. On reaching Obakamaga lake the writer left the survey party, and examined the rocks on this lake and Trout lake for three days. After making this examination he again proceeded on the line and overtook the survey party after about a week, and accompanied them to the Pegutchewan river. On the way all the lakes, which were found, were explored, and an excursion

[1] Report of the Survey and Exploration of Northern Ontario, 1900 (Toronto, 1901.) Map accompanying the report.

was made a few miles up and down the Bad river. At the Pegutchewan river the writer in company with Mr. Mitchell and Mr. Wm. Gregory, Mr. Niven's head packer, went down stream as far as the Transcontinental Railway survey line, and made notes of the rocks and timber on the route. On this river is a cache of the Transcontinetal line in charge of Mr. Brisbois, who gave us a hearty welcome. From this point we went by the railway survey line to the boundary line between Algoma and Thunder Bay and followed that to the Flint river, which we struck at a point about three miles above its junction with the Kemogami or English river. On reaching this point Mr. Niven sent out about half his men with two guides under the direction of his nephew Mr. David A. Niven. The writer accompanied this party to the post of the Hudson's Bay Company on Long lake, where he left them so as to have time to examine some of the features of the Pic river on his way to Heron bay, which was reached on September 20th. From Heron bay he proceeded to White river by rail and stopped over night. The next morning he left for Toronto where he arrived September 22nd. On the trip four dozen photographs were taken by the writer, but on account of moisture they were unfortunately all ruined.

Topography

The country between White river and the Pegutchewan river consists of a series of ridges and valleys extending parallel to the strike of the rock. The hills are from fifty to three hundred feet above the valleys, and the greatest elevation attained is about fourteen hundred feet above sea level. For the first thirty-five miles the general direction of the hills and valleys is northeast and southwest. An exception, however, is found in the north end of Quinquaga lake, which lies in a valley extending due north and south. From the thirty-fifth mile up to the forty-seventh mile the general direction of the hills and valleys is N. 70° W., but at the fifty-seventh mile the direction has changed to N. 80° E., and from this point to the seventy-eighth mile the general direction is east and west.

The entire region is glaciated and most of the hills are much rounded, but in many cases the side of the hill parallel to the dip of the rock has a gentle slope, while the other side presents a precipitous cliff. Near Obakamaga lake, and again near the fifty-three mile post, the country is quite sandy and shows no great elevation above the general level. In one place a glacial deposit in the form of a kame was noticed, but this was of small size.

In the valleys there is usually a stream or a lake and small swamps are frequent. The entire country except on burned spots and rock outcrops is covered with a heavy growth of moss and forest trees. On the assumption that in places where trees show a luxuriant growth, good agricultural ground will be found, it might be supposed that nearly the whole region would develop into a good agricultural country, but in view of the large number of rock outcrops and the fact that the soil when seen is sandy and has very little growth upon it where it has been cleared by forest fires, it would appear that the country is not adapted for agriculture.

North of the Pegutchewan river no rock outcrops were seen on the line, and the country is nearly level but is covered by a marsh. In a few places the soil was seen and found to consist of a sandy loam which will furnish an excellent soil for agricultural purposes. Owing to the lack of boring instruments it was impossible to get the depth of the swamp deposit and the soil, but in many cases the moss and peat were found to have a depth of over four feet, as seen in water holes and places where trees had been uprooted.

In the mountainous region are several rivers of fairly good size, but none of them are looked upon as good canoe routes. The Nagagami, however, is used by the Indians in going from Montizambert to Hudson bay, but the writer was warned by the guides of Mr. Niven's party not to attempt to go down it, as the rapids are dangerous and the portages not easily found. The Bad river is used to some extent

by the Indians, as was shown by the presence of several camping grounds and bark canoes along the shore. The river at 53 miles is used by the Indians who also have trapping grounds on the inlets of the lake just west. The Pegutchewan river is at present employed as a route for bringing in supplies to the Transcontinental Railway cache, and in high water is looked upon as a good route from Heron bay on the Canadian Pacific railway to Hudson bay, but in shallow water it is a very poor route, as it is full of rapids for most of its length.

On or near the line are several lakes of good size which would furnish ideal locations for summer resorts, except that at the present time they are almost inaccessible. The most important of these are Quinquaga, Obakamaga, Trout, and the lakes at thirty-three miles ten chains, fifty-four miles, and fifty-eight miles thirty-six chains. On the Bad river are two long narrow lakes which have most delightful surroundings. Other lakes which are found on the line do not as a rule exceed half a mile in length, with few exceptions have rocky or sandy shores, and contain fish in abundance.

The country from the line to Long lake is nearly level and is covered with luxuriant forest growth. Although the English river has several rapids in this distance, with a total fall of more than a hundred feet, no great elevations were noticed in the country on either side of the river. The soil where seen is a good sandy loam well adapted for all agricultural purposes. The last six or eight miles of the English river in going up to Long lake flows through a swamp covered with marsh grass, which is cut for the stock at the post of the Hudson's Bay Company.

The country around the north end of Long lake is rolling, and shows a few high hills but in looking south on the lake the elevation seemed to be greater. The route of the party, however, took us only about a mile and a half south of the outlet to where the Making Ground river enters Long lake. This river in the twelve miles from the lake to the Height of Land portage flows through a level country, much of which is covered by swamp, and shows only two rapids, neither of them having a fall of over three feet.

In coming down the Pic river the country is undulating as far as Sandy Hill falls. The hills are either sand ridges or rounded outcrops of schist and gneiss, which in many cases are largely covered with dense forest growth. In a few cases on the shores of MacKay's lake and Rabbit lake precipitous cliffs of granite and gneiss were observed. South of Sandy Hill falls the Pic river flows through a ravine which becomes deeper after passing White Otter falls and Lake Superior falls. The hills are either sand ridges or rounded outcrops of schist and gneiss, north of Sandy Hill falls.

Forests

The forest growth in the country crossed by the survey party is extremely dense, except in a few places where forest fires have cleared areas of greater or less extent near the water courses. In no case was a burned area found at any distance from the water. The trees found in this region are spruce, balsam, tamarack, Banksian pine, white cedar, birch and balm of Gilead.

Of these, spruce, both the black and white varieties, has the widest distribution. It is found extending from the Canadian Pacific railway to the English river, and was noted at most of the points where observations of forest growth were made. The reason for this wide distribution of the spruce appears to lie in the fact that it thrives not only in swamps but upon the uplands as well, and except in the poorest soil of the highest uplands it attains sufficient size to be used as pulp-wood. The largest trees are about fifteen inches in diameter, and were seen in swamp districts. The maximum height noticed was about a hundred feet. The average diameter of the trees is from six to eight inches.

Balsam is much less abundant than spruce, but has the same general distribution. In size it attains nearly the maximum noted for spruce, and shows about the same average size.

Banksian pine is quite important in this region, and in the mountainous district is second only to spruce. Few, if any, trees were seen exceeding ten inches in diameter, and the average of this tree is probably not over six inches. It is found growing almost entirely on the upland, on sandy knolls, and in the crevices of the rock. Its presence may be looked upon as an indication of sandy soil and good drainage. North of the Pegutchewan river the only places where Banksian pine appears were in burned areas near the Pegutchewan and English rivers.

Tamarack was first found in a living condition on the twenty-eighth mile, but dead trees were noticed on the outlet of the lake at five miles and on the outlet of Obakamaga lake. From the twenty-eighth mile up to the thirty-sixth mile it was seen occasionally, but the trees were not thrifty. In the forty-fourth mile this tree was again seen, and from that point to the English river it was found in greater or less abundance. The maximum diameter noted was two feet, and specimens were frequently seen having a diameter of fifteen inches; but the usual range is from eight to twelve inches in diameter. This tree is found only in swampy regions.

White cedar occurs throughout the entire region, but is not abundant. It is found on the edges of nearly all the lakes, on the banks of the streams, and in a few swamps, so that it would seem to a person travelling through the country and following the water routes, to be one of the principal trees of the region. It is, however, quite rare, as it is seldom found more than two or three hundred feet from the water's edge. The largest tree noted was about eighteen inches in diameter, but the usual range of mature trees is from eight to twelve inches.

Balm of gilead was first noted on the thirty-ninth mile and is distributed sparingly throughout the entire region from that point to the English river. On the Pegutchewan river it is one of the more abundant trees. The size of mature trees ranges from twelve to eighteen inches in diameter, and the tree attains a height of from fifty to seventy feet.

Birch and poplar are found growing together, along with Banksian pine, on sandy ridges and on burned areas from the Canadian Pacific railway up to the Pegutchewan river. They are also abundant along the shores of the Pegutchewan and English rivers, particularly on burned areas and river flats which are subject to inundation.

Aside from the timber noted above two or three trees of red pine were observed on a hill west of the outlet of the lake at five miles. Along the water courses hazel, alder and dwarf willow are abundant.

Small Fruits

The most common small fruit in the region is the blueberry or huckleberry, which is found growing principally in the crevices of rocks and on sandy knolls. It was, however, met with in some of the marshes. Near streams and lakes the bilberry is found in abundance and is one of the best fruits in the region. On sandy knolls wild strawberries were found frequently, but were not abundant. In the marshes the low bush cranberry is very plentiful, and with it the creeping snowberry is frequently found. The latter is one of the best flavored small fruits in the region. The black currant and the fetid currant are sparingly distributed, and a few red raspberries were noticed.

Fungi

Through the whole region fungi are very abundant, but the writer was unable to identify most of the varieties. The bear's head hydnum (hydnum caput ursi), and a variety of puff ball were the only edible fungi which were recognized by the writer.

Fauna

Very few animals were seen by the members of the party during the summer, but traces of various animals were quite frequent. The most abundant large animal is the moose; in all eight of these were seen by different members of the party during the summer, and they are found throughout the whole region traversed. One red deer was seen on the Pegutchewan river, and caribou tracks and runways were noticed in some abundance near the Flint river. On the shore of the lake at forty-two miles the tracks of a bear were seen.

Of the small animals, rabbits are the most abundant, and porcupine was seen on two or three occasions. Beaver is found sparingly in the region, and one dam was seen upon which the leaves of the twigs used by the beaver in building the dam had not yet wilted, so that the work must have been done within a few hours of our arrival. Two or three older dams were also observed, but none of the beaver were seen. Marten, fisher, stoat and mink are reported as abundant by Mr. Brisbois, the keeper of the Transcontinental Railway cache on the Pegutchewan river.

Domestic animals thrive, as at the Hudson's Bay Company's post at the north end of Long lake were a team of horses, two cows and a calf, chickens and ducks.

In the country traversed by the line very few birds were observed, but in clearings and near the travelled routes they are somewhat abundant. Of game birds, grouse and ducks are fairly well distributed. On several of the lakes gulls were seen, and on nearly every lake one or more pairs of loons had their habitation. The crow, raven and Canada jay are sparingly distributed throughout the region, while in clearings the song sparrow, the white-throated sparrow and the crossbill are quite abundant.

Fish

In all the lakes and rivers which were crossed fish are very abundant. The only species seen, however, were pike, pickerel, brook trout, suckers and white fish.

Water Power

On the inlet to Quinquaga lake are three rapids, the upper one having a fall of about twelve feet; the height of the other two was not taken, but as nearly as could be judged from the length of the rapid, the fall could not be less in either case than twenty feet. On going up this river beyond Lake Quematurobkistegong three rapids are found, which have a fall respectively of thirty feet, fifteen feet, and three feet. No other good water power was seen up to the Pegutchewan river, but at the point where the river turns north are two rapids with a total fall of about twenty-five feet. Although there are many other rapids in this river, they are not of sufficient height to be considered as desirable locations for water power. The rapids of the English river furnish several good water powers which have been described before (2). On the Pic river good water power can be developed above Segiwatan lake and below Papakiney lake, above Rabbit lake and at Split Rock portage; there is also excellent power in the rapids around Dead Man's portage as well as at Sandy Hill, White Otter and Lake Superior falls.

Agricultural Land

The region south of the Pegutchewan river, being made up of a series of rocky and sandy ridges together with valleys which are usually covered with a marsh deposit, does not offer much inducement to the agriculturist. On the supposition that where forest growth is luxuriant other vegetation would thrive, it would seem that this region should furnish good agricultural land. The soil where seen is a

[2]Rep. Exploration Northern Ontario, p. 157.

sand or sandy loam, usually the latter. The underlying rocks are composed largely of orthoclase, which by its decomposition yields a certain amount of plant food. It is probable, however, that this region will give its best returns if properly forested, although regions having a similar soil are very productive along the Atlantic seaboard of the United States. Particularly is this true of the pine barrens of New Jersey. The amount of rock in this region, however, is a barrier to its development as an agricultural region.

The country north of the Pegutchewan river is at present covered with a spruce swamp, but in some places the underlying soil was seen and found to consist of a sandy loam which is most excellent for agricultural purposes. During the summer a visit was made to the Transcontinental Railway cache on the Pegutchewan river where potatoes, cucumbers, tomatoes, peas, radishes, lettuce and beans were grown, and all of them were in a thrifty condition. This country produces an excellent quality of potatoes, as is shown by those raised at the north end of Long lake each year by the Hudson's Bay Company's employees. At Long lake oats mature, and in spite of the unfavorable season the crop was doing fairly well. No effort has been made to grow forage crops, as there is an abundance of wild grass, but on the portages on the Pic river timothy and alsike clover were growing and doing well. The latter is evidently the result of accidental seeding in transporting hay for the stock at some of the Hudson's Bay Company's posts.

Geology

In the region south of the Pegutchewan river the rocks are all granite, gneisses and schists which are cut in many places by diabase dikes, and without tracing the different bodies of rock to other outcrops of known age at the east or west it is impossible to assign definitely any given age to some of them. Large masses, however, are undoubtedly Laurentian in age, and these are made up of biotite granite, pegmatite and biotite granite gneiss.

In view of the fact that a large body of so-called Huronian has been mapped on White lake, north of Montizambert, and an outcrop of hornblende schist on Kabinakagami lake has been referred to the Huronian in the report of the Survey and Exploration of Northern Ontario in 1900 (3), it seemed probable that similar rocks would be found crossing the line. Inasmuch as Huronian was made to cover not only the rocks that are now classed under that name, but also all dark rocks of greater age, the rocks which were found on the line connecting these outcrops are referred tentatively to the Keewatin. These rocks are hornblende schists or gneisses, and are found developed best on Quinquaga lake, where they constituted all the outcrops examined. So far as the material collected is concerned, it might be looked upon as a hornblendic variation of the Laurentian rocks, but in view of the fact that a line connecting the two outcrops, heretofore mapped on White lake and Kabinakagami lake, passes directly through these outcrops, it seems almost certain that the three should be considered to be of the same age. In referring them to the Keewatin the opinion of the writer is upheld by Prof. A. P. Coleman, and specimens from the contact of the Laurentian and Keewatin which were collected by Dr. Coleman near Lake Nipigon are almost identical in appearance with rocks found by the writer a short distance from Quinquaga lake as well as on the lake itself. Another strong ground for considering these rocks to be of different age from the others in the region is that at about equal distances from the main body of hornblendic rock to the southeast and northwest are narrower bands of hornblendic rock, one of which shows the contact phase mentioned above. With the exception of two isolated cases, these masses are the only outcrops of schistose hornblendic rock within twenty-five miles of this body. In one of these isolated cases the outcrop consists of a segregration of basic material, which is composed almost entirely of hornblende, enclosed in a

(3) Map accompanying report, and p. 13.

biotite gneiss, and the entire segregation is not more than ten feet long and two feet wide. The other isolated case is situated on the outlet of Obakamaga lake, and resembles the rocks around Quinquaga lake, so that although it is in a region where Laurentian rocks are abundant, yet as it is apparently in a syncline it is possible that it may be an outlier of Keewatin.

A large body of garnetiferous biotite granite gneiss, which lies to the north of an outcrop of hornblende schist in the forty-fourth mile, agrees so closely in its characters with Grenville gneisses from the Muskoka region that it would seem to belong to this age. The occurrence of garnetiferous biotite schist which is referred to the Huronian has been noted on Mackay's lake; this latter rock is, however, of very much closer texture, but if continued to the east it would cross the line in the general region of these outcrops. In view of the fact that rocks of known Grenville age have not yet been distinguished in this region, it will be necessary to have considerable work done in tracing these outcrops to the east and west before any definite age can be assigned to them. In this report the garnetiferous rocks are referred to the Laurentian, for the reason that the only distinctive feature which would lead to other classification, (if we except the outcrop of Huronian or Keewatin schist on Mackay's lake) is the presence of garnet in the rock. In all other points these rocks are apparently the same as the Laurentian gneisses found in other parts of the line.

At frequent intervals dikes are to be found cutting both the Laurentian and Keewatin rocks. These dikes consist of diabase, which in all cases is free from olivine, and in many instances, in addition to labradorite, augite and magnetite, contains primary quartz and biotite. Samples were taken from all outcrops of diabase, as well as from a few boulders, in the hope that some of them might contain nickeliferous pyrrhotite, but in no case was this mineral found.

In the determination of the geologic age of the crystalline rocks, the writer has been guided principally by their petrographic character, and the presence of rocks of similar age and composition at the east and west which by extension would cross the line at about the point where the rocks in question were obtained.

Sedimentary rocks were first found in place on the Flint river. These sediments consist of a limestone which is referred by the writer to the Lower Devonian.

Biotite Granite at the Start

The first rock noted in place was found near the first mile post, and is a fine grained biotite granite. In the hand specimen the rock is light gray in color, and consists principally of quartz and orthoclase in about equal proportions, together with about five per cent. of biotite. No trace of gneissic structure could be found, and the rock is without doubt Laurentian in age. Owing to slight alteration of the biotite the rock has a reddish tinge, due to the presence of small traces of iron hydroxide, but this is only seen on the weathered surface.

Near the second mile post an outcrop of this same rock is to be found, and with it are bands of pegmatite. In mineral composition this rock cannot be distinguished from the last mentioned, and the texture is the same. The pegmatite has the same mineral composition as the granite, but has crystals from an inch to an inch and a half across. This outcrop is at the top of a steep hill about two hundred and fifty feet high, and although it was apparent that the rock was very near the surface yet with the exception of the summit, the entire hill was covered with moss and sandy loam in which a good forest growth of spruce, birch and poplar were present.

At two miles sixty chains, rock of very similar character is found at the top of a cliff about two hundred and fifty feet high. The exposure here extends about a half mile east of the line and forms an almost vertical precipice facing the south. At the foot of the cliff is considerable talus. The rock at this point consists of

bands of granite and pegmatite, but except for this banded appearance, there is no trace of gneissic structure. The pegmatite is composed almost entirely of quartz and orthoclase, with a very small percentage of biotite and traces of magnetite. No thin section was made of the pegmatite bands. The granitic bands are fine grained and are rather pink, but except for the pink tinge, the rock is apparently the same as that found at the two mile post. Under the microscope the granite was found to consist of orthoclase, microcline, plagioclase, quartz, biotite and magnetite. The orthoclase is considerably kaolinized and shows inclusions of limonite, which accounts for the pink color of the rock. The plagioclase approaches andesine in the angle of extinction, and apparently grades into orthoclase. The quartz shows no crystal outline, but is considerably rounded and contains numerous liquid and gaseous inclusions.

This same rock is found outcropping near the three mile post and at three miles twenty-five chains, and in the latter place exhibits a peculiar feature of differential weathering. Two blocks of granite about three feet high and three feet square at the base are situated about six feet apart, and are the only prominences to be seen.

At three miles fifty chains is a nearly vertical cliff of the same granite. On the top of this cliff a dike about three or four inches across was noted. In the hand specimen the rock is felsitic, but shows some small phenocrysts. In color it is dark greenish brown to black, and the specimen is considerably weathered so that the brown color is evidently due to oxidation of iron. Microscopically, the rock is porphyritic, and contains phenocrysts of idiomorphic augite and a feldspar which has been altered almost entirely to calcite. The ground mass consists of quartz, microlitic plagioclase and biotite. The granite found at this point continues to about four miles ten chains.

Gneiss Outcrops

At four miles twenty-two chains we turned east to a lake which is about fifteen chains east of the line. This lake is about a mile and a half long and is shaped very much like a Greek cross. The main part of the lake extends almost north and south, while the east and west arms extend about N. 50° E. The inlet of this lake was not seen by the writer, but the outlet flows from the northeast arm. At numerous places about the shores of this lake outcrops of biotite gneiss were found, with a strike of N. 40° E., dip 70° N.W. At the north end of the lake is an exposure of syenite containing considerable epidote, which is apparently intruded in the gneiss and has a strike of N. 30° E. These rocks are both referred to the Laurentian. On the west arm of the lake near the five-mile post is a dike about a hundred feet wide. Microscopically, the rock is granitic and shows lath-like crystals of plagioclase, magnetite and pyrite. The other dark minerals could not be determined in the hand specimen. The color of the rock is dark green to black, but is mottled with light spots which are possibly quartz and calcite. Under the microscope the rock is seen to consist of labradorite, pyroxene, quartz, magnetite, pyrite, biotite and secondary calcite and chlorite. The labradorite is hypidiomorphic, and forms an interlaced network of polysynthetically twinned, lath-like crystals which include in their interstices the remaining minerals. The pyroxene is quite bright and exhibits no crystal outline; in a few cases it is found altering to chlorite. The quartz is clear and exhibits liquid and gaseous inclusions, but is present in only small quantities. Magnetite and pyrite are fairly abundant, but show no distinct crystal outline. Biotite is present in very small quantities, and is usually partially altered to chlorite.

On leaving this lake we followed the outlet to a small lake on the Scaborik river which flows into Quinquaga lake. An outcrop of gneiss was noted about a mile from the mouth of the outlet of the lake at five miles, but no other rock was found in place until we came into the main river, where at a point about two miles east of the nine-mile post an outcrop of quartz diorite schist, varying in texture from very compact to granitic, was found on the east side of the river at a rapid which has a fall of about

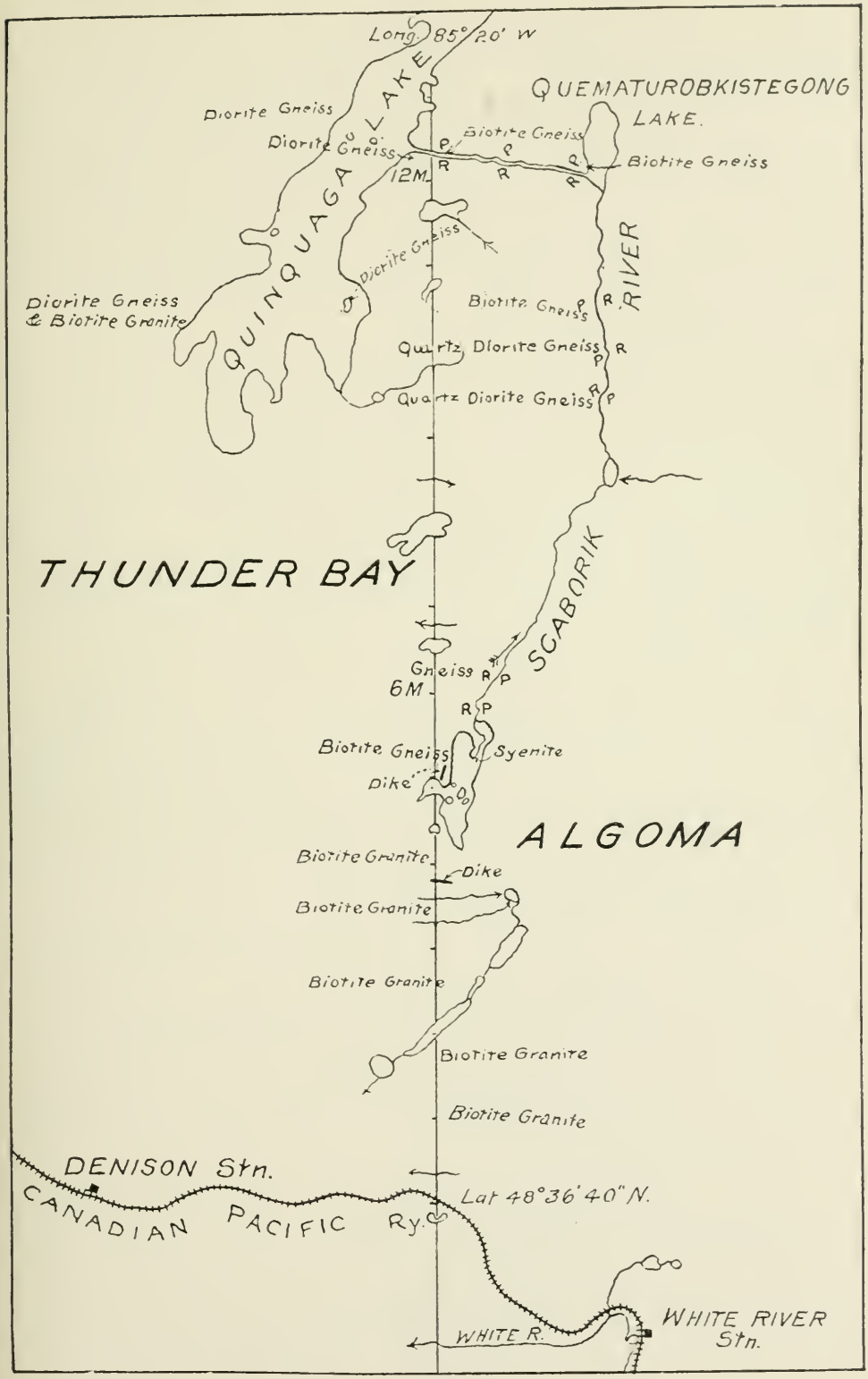

Long. 85° 20' W
QUEMATUROBKISTEGONG LAKE.
Diorite Gneiss
Diorite Gneiss
Biotite Gneiss
Biotite Gneiss
12M.
QUINQUAGA LAKE
Diorite Gneiss
Diorite Gneiss & Biotite Granite
Biotite Gneiss
RIVER
Quartz Diorite Gneiss
Quartz Diorite Gneiss
THUNDER BAY
SCABORIK
Gneiss
6M
Biotite Gneiss
Syenite
Dike
ALGOMA
Biotite Granite
Dike
Biotite Granite
Biotite Granite
Biotite Granite
Biotite Granite
DENISON Stn.
Lat 48°36'40" N.
CANADIAN PACIFIC Ry.
WHITE RIVER Stn.
WHITE R.

Plate I.

twelve feet. This schist shows in the hand specimen of the coarser material hornblende, quartz, orthoclase and plagioclase. Under the microscope the fine grained material shows hornblende, quartz, orthoclase, magnetite and traces of chlorite. The hornblende is very minute and in some cases idiomorphic, but the other minerals show no crystal outline. About a quarter of a mile further north is another outcrop of quartz diorite gneiss, which is on the west side of the river near a rapid having a total fall of about twenty-five feet. This rock is distinctly banded and consists of hornblende, quartz, orthoclase and plagioclase. In texture, the hand specimen is granitic, and the entire exposure is referred to the Keewatin. About a mile farther north, and at a rapid having a fall of twenty-five to thirty feet, biotite gneiss of Laurentian age is found associated with pegmatite. This gneiss is made up of quartz and orthoclase with about ten per cent. of biotite and chlorite.

On the first portage after leaving Quematurobkistegong lake is a dark biotite gneiss, with strike N. 30° E., and the dip nearly vertical. No sample of this was taken, as it apparently was of the same composition as the rock at the last outcrop mentioned. At this point is a rapid or fall with a total drop of about twelve feet, which would furnish very good waterpower. Two other rapids were noted between this point and Quinquaga lake, but the writer was unable to estimate the height, as it was necessary to cut portages from a quarter to a half a mile long, and the entire rapid could not be seen from any one point in either case. At the lower rapids, at a point about twenty chains east of the line at twelve miles twenty chains, is a gray gneiss composed of biotite, quartz and orthoclase. This rock is almost granitic in texture and although a certain banding is to be seen, it was not sufficiently distinct to permit of accurate observations as to strike and dip. The rock appears as a ridge extending almost north and south.

Diorite Schist on Quinquaga Lake

Just south of the inlet of Quinquaga lake and about twenty chains west of the twelve mile post is a compact diorite schist, which in the hand specimen appears almost identical with the rocks found by Prof. Coleman near lake Nipigon and referred by him to the contact zone of the Laurentian and Keewatin. In the hand specimen this rock is seen to be banded, the darker bands being made up of hornblende and orthoclase, and the lighter bands of quartz and orthoclase. In texture the rock is compact to fine granitic. Under the microscope the dark bands are found to be composed of green hornblende, which represents from sixty to seventy per cent. of the rock. The remainder is made up principally of orthoclase which is altering to kaolin, but one or two particles of a plagioclase which approaches andesine in angle of extinction were observed. No quartz was seen in the thin section, although a few particles were noted in the hand specimen near the contact of the light and dark bands. The strike of this rock is N. 40° E., and the dip is nearly vertical, so that if this rock were produced it would be found outcropping only a few chains west of the biotite gneiss, which was found north of the lower rapids of the inlet to this lake.

On an island about a mile west of ten miles forty chains diorite schist is again found, having the same strike as the last mentioned outcrop. This rock shows bands of quartzose material, apparently the same as the light bands of the last mentioned outcrop. In the hand specimen the dark bands are found to be identical in appearance and in mineral composition with the rock from the last mentioned outcrop. In weathering, the feldspars in both cases were pink to brown, and the hornblende shows very little alteration. In the outcrop under consideration the hand specimen shows hornblende and orthoclase. Under the microscope the hornblende is found to comprise about sixty per cent. of the rock, the balance being kaolinized orthoclase, with a few particles of quartz and pyrite. About two miles west of this last outcrop, is another outcrop of hornblende gneiss of granitic texture. This rock consists of bands which in the hand specimen are apparently composed of hornblende and orthoclase alternating with narrower bands made up of quartz, orthoclase and small amounts of biotite. The

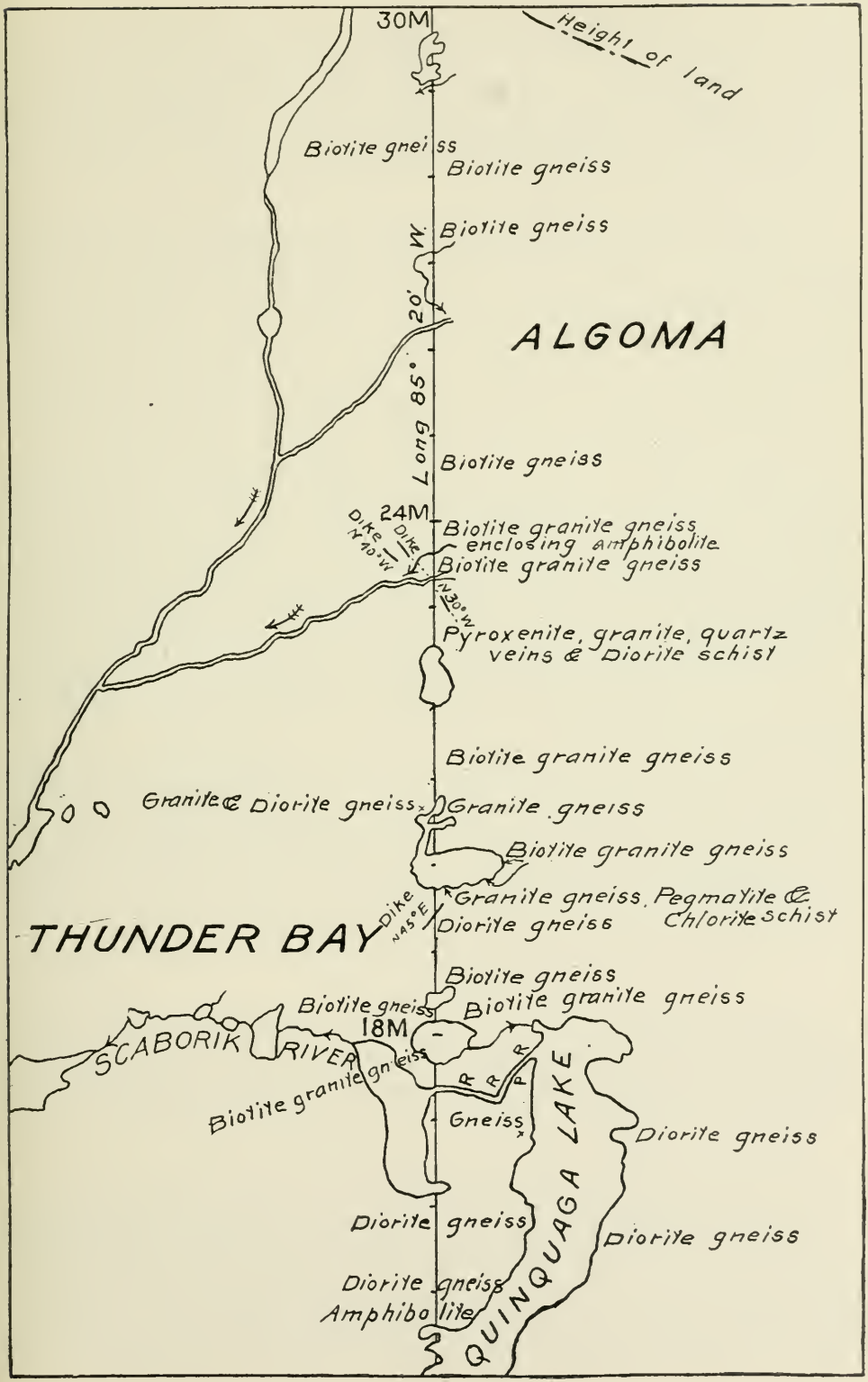

30M
Height of land
Biotite gneiss
Biotite gneiss
Biotite gneiss
Long 85° 20' W.
ALGOMA
Biotite gneiss
24M
Dike N 10° W
Dike
Biotite granite gneiss enclosing amphibolite
Biotite granite gneiss
N 20° E
Pyroxenite, granite, quartz veins & Diorite schist
Biotite granite gneiss
Granite & Diorite gneiss
Granite gneiss
Biotite granite gneiss
Granite gneiss. Pegmatite & Chlorite schist
Dike N 45° E
THUNDER BAY
Diorite gneiss
Biotite gneiss
Biotite gneiss
Biotite granite gneiss
18M
SCABORIK RIVER
Biotite granite gneiss
Gneiss
Diorite gneiss
QUINQUAGA LAKE
Diorite gneiss
Diorite gneiss
Diorite gneiss
Amphibolite

Plate II.

darker material when viewed under the microscope shows green hornblende, a small amount of quartz, orthoclase and a few particles of magnetite. The hornblende is distinctly pleochroic. The orthoclase is much kaolinized, and shows some traces of iron hydroxide which gives a pink tinge to the hand specimen. A few crystals of plagioclase were noted, and scattered throughout the mass are small crystals which appear to be apatite. This rock like the last mentioned has a strike of N. 40° E., and a dip nearly vertical.

On a point about twenty chains east of fourteen miles fifty chains is a basic phase of this rock. At this point the rock apparently is made up almost entirely of hornblende with a few streaks of quartz and orthoclase, and may be classed as an amphibolite. Very little trace of gneissic structure was noticed here, though about ten chains farther north the rock is distinctly gneissic. A point of interest connected with this basic phase is that it is about the centre from north to south of the hornblendic rocks, and may possibly be a basic segregation. Under the microscope this rock is found to be almost entirely composed of hornblende with a very little kaolinized orthoclase as its only other constituent. Although quartz was seen on one side of the hand specimen in masses of fairly good size, no trace of it could be found in the thin section.

Outcrops of diorite gneiss were also noted on the lake shore two miles east of fifteen miles twenty chains, one mile east of the sixteen-mile post, and two miles east of the seventeen-mile post, but no samples of these outcrops were taken, inasmuch as they exhibited no peculiarities to distinguish them from those at the south end of the lake. It is worthy of note, however, that the rocks at the north end of this lake have a strike of nearly north and south with the dip nearly vertical, and the general direction of the lake changes with the alteration in the strike of the rocks so that while the south end of the lake extends nearly N. 40° E., the north end extends almost due north and south.

On leaving Quinquaga lake three short rapids are found between this point and the line, but none of these are more than three or four feet high, and in only one case was it necessary to portage.

On the south shore of a small lake at seventeen miles fifty chains is a granitic gneiss composed of quartz and orthoclase with a very small amount of biotite. In addition to these constituents considerable epidote and a few particles of pyrite are present in the rock. On the northeast shore of this same lake is biotite gneiss which in the hand specimen appears distinctly banded. The rock is quite fresh in appearance, and contains about twenty per cent. biotite. the balance being quartz and a feldspar, probably orthoclase. This rock strikes N. 45° E., and dips 45° S.E. Both of these outcrops are to me referred to the Laurentian.

Keewatin-Laurentian Contact

About three-quarters of a mile east of eighteen miles twenty chains is a banded diorite gneiss of granitic texture. The rock is made up of narrow bands of dark material composed almost entirely of hornblende and orthoclase, while broader bands consist largely of orthoclase with small amounts of quartz and a few particles of biotite. This exposure is probably Laurentian, though it is quite close to the contact of the Laurentian and Keewatin.

At eighteen miles thirty chains and again at nineteen miles outcrops of biotite gneiss were found which are of Laurentian age.

At nineteen miles ten chains a compact diorite schist occurs which shows the contact phase between the Keewatin and Laurentian before mentioned as being like that found by Prof. Coleman near lake Nipigon.[4] This rock has a strike N. 25° E. and dip 60° N.W. In the hand specimen it appears banded, the darker bands being composed largely of black hornblende with somewhat altered orthoclase associated with it. The lighter bands are olive green in color, and show green hornblende with orthoclase. Under the

[4] See p. 100.

microscope the rock is found to be composed of about sixty per cent. hornblende and the remainder about equally divided between quartz and orthoclase. This same rock is found outcropping at nineteen miles twenty chains.

At nineteen miles forty-five chains is a dike with a strike of N. 45° E. The borders of this dike were not seen, so that its width is unknown. The color of this rock is dark brownish green and it shows lath-like plagioclase, magnetite and augite in the hand specimen. In texture it is fine granitic, or as the crystals of plagioclase are lath-like, we might say diabasic. Under the microscope the rock is found to be composed of labradorite, augite, magnetite, pyrite, quartz and secondary calcite and chlorite. The labradorite is largely altered to calcite but shows that it was formed in lath-like crystals which enclose the other minerals in its interstices. The augite is altered on the edges to chlorite and shows considerable twinning. The quartz contains liquid and gaseous inclusions.

On the south side of the lake at twenty miles are three outcrops of Laurentian gneiss and granite. The most westerly outcrop is composed of bands of granite gneiss, pegmatite and chlorite schist. An outcrop of similar material was found on the line at nineteen miles sixty-six chains. The strike of these rocks is about N. 30° E., although local variations are found. Samples from the outcrop on the lake show the granitic and pegmatitic bands to be composed of quartz, orthoclase and biotite. The chloritic material is composed almost entirely of chlorite, which is derived from the alteration of hornblende and is possibly a bit of included Keewatin rock. The other two outcrops on the lake are fine grained biotite granite gneiss, which in the hand specimen shows very little trace of the gneissic structure. The rocks are composed of quartz, orthoclase and biotite, and in places traces of epidote are found. A thin section of the rock at the east end of the lake shows orthoclase, plagioclase, quartz, biotite and titanite. The orthoclase is considerably decomposed, showing kaolin along the lines of cleavage of the crystal particles. The plagioclase is apparently andesine.

At the east side of the lake at twenty miles forty chains is a granite gneiss containing epidote. Directly west of this on the west shore of the lake is a granite containing inclusions of diorite gneiss. The granite is supposedly Laurentian in age, while the hornblendic rock is probably Keewatin. A sample taken at the contact and containing both rocks shows in the granite quartz, orthoclase, biotite and traces of hornblende. The diorite gneiss is apparently made up almost entirely of hornblende with some feldspar. A thin section at the contact shows the granite to be made up of quartz, orthoclase, plagioclase, biotite, hornblende, titanite and a trace of magnetite. The orthoclase is considerably altered to kaolin. The plagioclase is apparently andesine. The diorite gneiss is composed of about sixty per cent. hornblende, with the balance orthoclase and plagioclase. The orthoclase in this rock is not so much altered as in the granite.

At twenty-one miles ten chains is an outcrop of biotite granite gneiss which is almost level and is only at a slight elevation above the surrounding swamp. The rock has evidently been worn smooth by glacial action, but the surface has been decomposed to some extent, so that polishing and glacial striæ were not observed. The strike of this rock is N. 50° W., but on account of the level surface the dip could not be taken.

A Complex Outcrop at 23 Miles

On top of the mountain at twenty-three miles is an exposure of an altered pyroxenite which is cut by granite and quartz veins enclosing diorite gneiss. This complex outcrop probably represents both Laurentian and Keewatin rocks. A few chains east of the line at about twenty-three miles ten chains this complex rock is cut by a dike about two hundred feet wide striking N. 30° W., and having a nearly vertical dip. In texture the rock from this dike is fine granitic and it shows plagioclase, pyrite and magnetite, but the other dark minerals cannot be identified in the hand specimen. Under the microscope the rock is found to consist of labradorite, augite, magnetite,

pyrite and chlorite. The labradorite forms the characteristic intergrown network common in a diabase. The augite is usually bright and without any crystal outline, having been formed in the interstices in the labradorite. The magnetite and pyrite are irregular in outline, and apparently were formed after the labradorite, as they enclose in one or two instances crystals of the latter.

About half a mile west of the line at twenty-three miles fifty chains is another outcrop of diabase, which has the same strike and dip and is about two hundred feet across About ten chains west of this exposure is a dike about three hundred feet across with the strike N. 40° W. and dip vertical. This latter exposure consists of a rock which in texture is almost identical with the one at twenty-three miles ten chains, and under the microscope the same minerals are found, but the feldspars are less altered. The dike to the east is finer grained than either of the other two outcrops, and the only minerals which can be distinguished in the hand specimen are plagioclase and a few particles of pyrite. Under the microscope this last rock is found to show a characteristic network of labradorite with pyroxene and magnetite in the interstices. Considerable secondary calcite is present owing to the partial decomposition of the labradorite, and the pyroxene shows some alteration to chlorite on the edge of the crystals. These dikes cut a biotite gneiss which is interbanded with pegmatite and which has a strike N. 30° E. The pegmatitic bands are composed almost entirely of orthoclase with small amounts of quartz. The gneissic material is the characteristic biotite granite gneiss of Laurentian age.

This same gneiss occurs on the line at twenty-three miles seventy chains, and at that point contains a segregation of coarse-grained amphibolite, which is about two feet wide and ten feet long. Under the microscope this amphibolite is found to consist almost entirely of hornblende containing inclusions of biotite and orthoclase. A very little quartz is also present. In view of the fact that granite enclosing diorite gneiss was found at the twenty-three mile post, it is but fair to assume that this apparent segregation may be but an inclusion of Keewatin rock which has re-crystallized somewhat slowly.

Biotite Gneiss

Biotite gneiss which apparently is of the same age as that found at twenty-three miles seventy chains is found at twenty-four miles sixty chains and continues from that point about ten chains to the north. It is again found at twenty-seven miles twenty chains, and at this point is quite contorted, showing what is apparently cross-bedding or the formation of lenticular masses. On account of this contortion it was impossible to get the dip, but the general strike of the rock is about N. 20° E. The rock is composed of quartz, orthoclase, biotite and a few particles which appear to be hornblende.

At twenty-seven miles seventy chains is a large exposure of biotite gneiss having a strike of N. 30° E., and dip 73° S.E. This outcrop extends from about twenty-seven miles sixty-six chains to a little beyond the twenty-eight mile post, and was followed for about five chains east and west of the line. A few streaks of pegmatite were found near the southern edge of the exposure, but in general the rock is of a fine granitic texture showing its gneissic character only in the field. The rock is light gray in color and is similar in appearance to Barre granite. At about twenty-eight miles twenty-five chains is what is apparently a continuation of the same rock, but the strike is N. 55° E. and the dip 40° N.W., so that between these two outcrops we apparently have the eroded summit of a tilted anticlinal fold similar to one noted later.[5] Most of the rock at this point consists of quartz, orthoclase and biotite, forming a rock of fine granitic texture, which in the hand specimen cannot be distinguished from the rock last mentioned. A few segregations of coarse hornblende were noted, but these do not seem to form any essential part of the rock mass, and are probably to be considered as included rock fragments of slow re-crystallization.

[5] See p. 118.

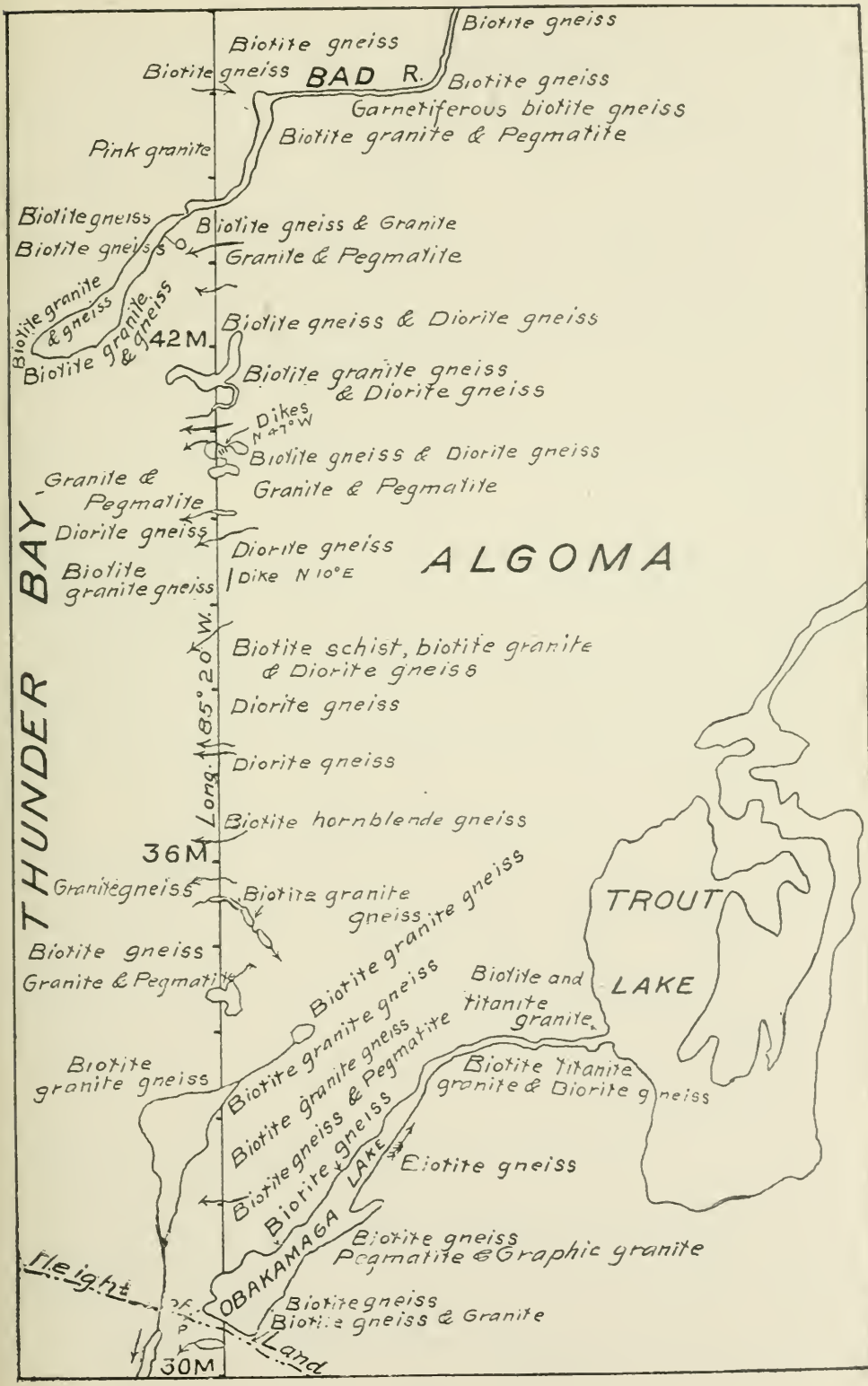

Biotite gneiss
Biotite gneiss
Biotite gneiss
BAD R.
Biotite gneiss
Garnetiferous biotite gneiss
Biotite granite & Pegmatite
Pink granite
Biotite gneiss
Biotite gneiss & Granite
Biotite gneiss
Granite & Pegmatite
Biotite granite & gneiss
Biotite granite & gneiss
42M.
Biotite gneiss & Diorite gneiss
Biotite granite gneiss & Diorite gneiss
Dikes N 47° W
Biotite gneiss & Diorite gneiss
Granite & Pegmatite
Granite & Pegmatite
Diorite gneiss
Diorite gneiss
Biotite granite gneiss
Dike N 10° E
ALGOMA
THUNDER BAY
Long. 85° 20' W.
Biotite schist, biotite granite & Diorite gneiss
Diorite gneiss
Diorite gneiss
Biotite hornblende gneiss
36M.
Granite gneiss
Biotite granite gneiss
Biotite granite gneiss
TROUT LAKE
Biotite gneiss
Granite & Pegmatite
Biotite granite gneiss
Biotite granite gneiss & Pegmatite
Biotite and titanite granite
Biotite granite gneiss
Biotite titanite granite & Diorite gneiss
Biotite gneiss
Biotite gneiss
OBAKAMAGA LAKE
Biotite gneiss
Pegmatite & Graphic granite
Biotite gneiss
Biotite gneiss & Granite
Land
30M

Plate III.

From this last mentioned outcrop up to thirty miles twenty-five chains the country is sandy, in some cases sandy loam, and no rock outcrops were noted. At this last mentioned point, however, there is a small lake about half a mile long, which has at its east end an outcrop of biotite gneiss associated with granite. The exposure is small and not well enough developed to show the strike and dip. From this lake to Obakamaga lake the country is covered with a sandy loam. Going east on Obakamaga lake rock outcrops are found very frequently, but all of them are composed of biotite gneiss, granite, pegmatite and syenite, which are undoubtedly Laurentian in age. About two miles east of the line on the south shore of the lake a small amount of graphic granite was found in an exposure of pegmatite. This material is almost fibrous in texture, the fibres of quartz and orthoclase being from one to two millimetres across and about three inches long. Aside from this occurrence of graphic granite no peculiar features were noted in the rocks on this lake which would distinguish them in any way from the rocks found on the first four miles of the line and at other places which are not near hornblendic rocks. About fifteen chains east of the line the rock strikes N. 30° E., and dips 70° S.E. About four miles east of the line the strike is N. 30° E., and the dip is to the northwest, probably about 30°, but as the only place where the dip could be taken was under water it was impossible to get it exactly. About a mile farther east, however, a dip of 30° was found.

About midway between Obakamaga lake and Trout lake is a small outcrop of rock which is very much contorted and looks almost like a fused conglomerate. The bulk of the rock is acid in character, while some bands and lenticular masses are extremely basic. The more basic portions are essentially diorite and are made up of hornblende, orthoclase and plagioclase. No quartz could be found, either in the hand specimen or under the microscope in this portion of the rock. The more acidic portions consist of orthoclase, plagioclase, biotite and titanite, with a few particles of quartz, and the rock is evidently a biotite syenite. The biotite is altering to chlorite. The orthoclase is considerably kaolinized so that in the hand specimen it appears white. The titanite is idiomorphic and is evidently the first mineral to separate from the magma. The bulk of the exposure is undoubtedly Laurentian, but it is probable that the diorite is included Keewatin.

Biotite Titanite Granite at Trout Lake

On the west side of Trout lake is an outcrop of biotite titanite granite or granite gneiss, in a nearly horizontal position, but dipping slightly to the southeast. In the hand specimen this rock is seen to be composed of quartz, orthoclase, titanite and a small amount of biotite. The dark minerals probably do not compose more than five per cent. of the rock. A prism and orthodome are visible in some of the crystals of titanite, and as these crystals are perfect in outline while the rest of the rock is made up of minerals which do not have distinct crystals, it is evident that this is the first mineral to separate from the magma. This rock is especially interesting as the only one found on the trip in which well formed crystals of any kind occur. The most abundant mineral in this rock is orthoclase and with it is associated plagioclase which extinguishes at about 4° to 6°.

On coming back to the line the first half mile north of Obakamaga lake showed no outcrops of rock, the country being covered with a good sandy loam. The country slopes gradually upward and at thirty-one miles seventy chains there is an outcrop of biotite granite gneiss which has a precipitous cliff about fifty feet high on the north side. The rock at this point varies in texture from a biotite schist to a pegmatite, but on account of its contorted nature the dip and strike could not be taken. The minerals composing these rocks are biotite, quartz, orthoclase and magnetite, all of which are visible to the naked eye. At thirty-two miles forty chains an outcrop of very similar gneiss is found which forms a ridge running in a northeast and southwest direction down to the lake, about a quarter of a mile west of the line, and extending parallel to the inlet of this lake for nearly a mile east of the line.

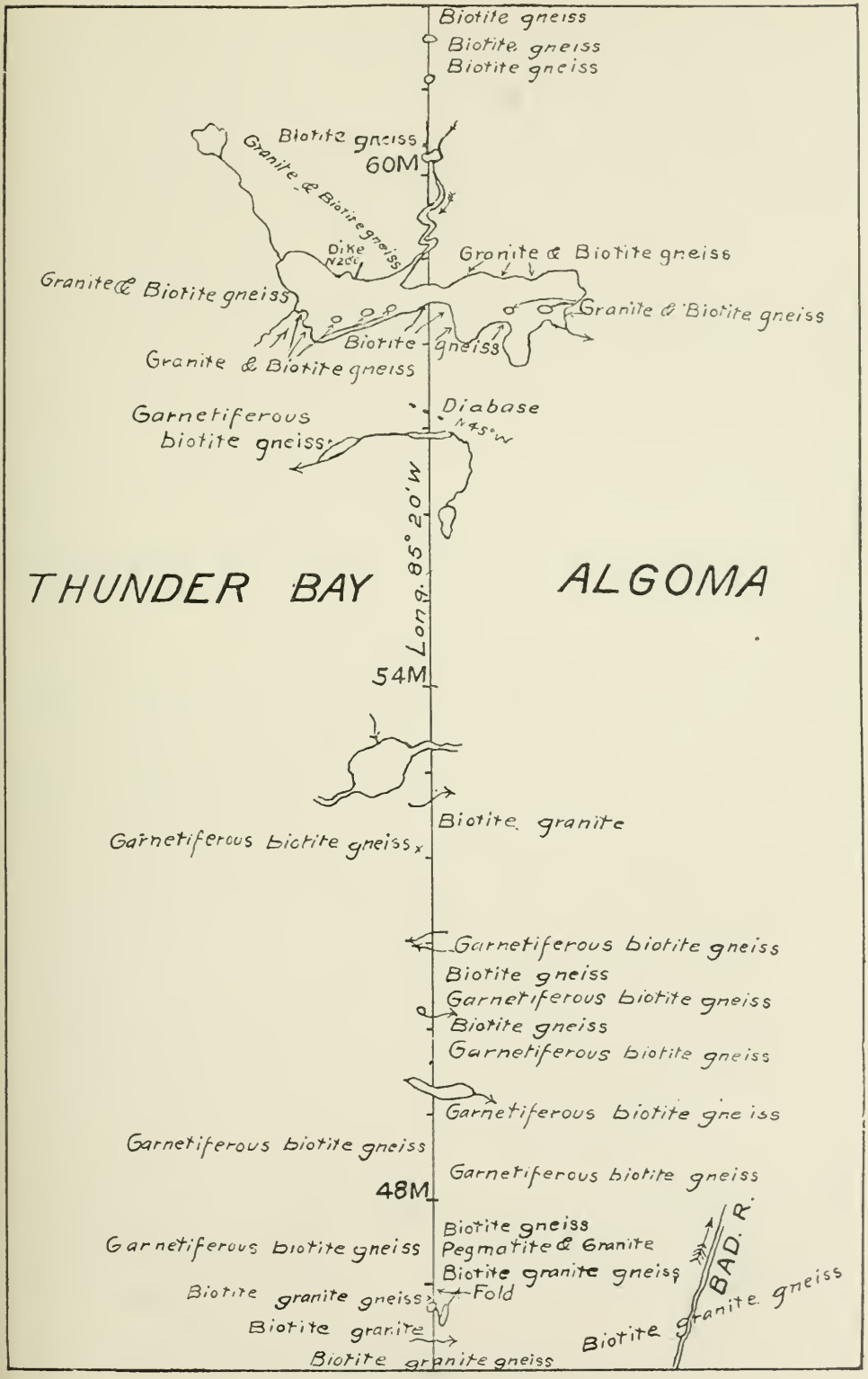

Biotite gneiss
Biotite gneiss
Biotite gneiss
Biotite gneiss
60M
Granite & Biotite gneiss
Dike N20°
Granite & Biotite gneiss
Granite & Biotite gneiss
Granite & Biotite gneiss
Biotite gneiss
Granite & Biotite gneiss
Garnetiferous biotite gneiss
Diabase N45°W
Long. 85° 20' W
THUNDER BAY
ALGOMA
54M
Biotite granite
Garnetiferous biotite gneiss
Garnetiferous biotite gneiss
Biotite gneiss
Garnetiferous biotite gneiss
Biotite gneiss
Garnetiferous biotite gneiss
Garnetiferous biotite gneiss
Garnetiferous biotite gneiss
48M
Garnetiferous biotite gneiss
Biotite gneiss
Pegmatite & Granite
Biotite granite gneiss
Fold
Biotite granite gneiss
Biotite granite
Biotite granite gneiss
BAD. R.
Biotite granite gneiss

Plate IV.

At thirty-three miles ten chains is a large outcrop of biotite gneiss which shows alternating bands of fine and coarse granite. In some cases the rock approaches pegmatite in character. In the hand specimen the fine grained material is seen to consist of orthoclase, quartz, biotite and occasionally grains of magnetite, while the coarser material consists almost entirely of quartz and orthoclase. Under the microscope the finer material exhibits orthoclase, plagioclase, quartz, biotite and muscovite. The orthoclase is considerably decomposed, giving rise to kaolin and small amounts of iron hydroxide. The plagioclase shows the extinction angle of andesine. Hand specimens of the rock show almost no traces of the gneissic structure though it is quite prominent in the field. The strike is N. 45° E. The outcrop extends for nearly half a mile north of this point. On the small lake about a mile east of the thirty-four mile post a ridge of apparently the same rock is found outcropping in the north shore, although no outcrops were noticed between these two. Another outcrop of what was apparently the same rock was found on the line at thirty-four miles twelve chains. This outcrop has the same strike as those last mentioned.

On the north shore of a small lake at about thirty-four miles forty chains an outcrop of gneiss and pegmatite is found. The rock is well exposed here and exhibits glacial striæ with a direction of N. 32° E. The strike of the rock is N. 45° E., dip 30° S. The hand specimen shows orthoclase, quartz, biotite and titanite. Near the thirty-five mile post, similar rock is found which shows a distinct gneissic character in the hand specimen and has a strike of N. 45° E. In this rock no titanite was observed. The same rock continues up to thirty-five miles ten chains where the summit of the ridge between the lake at thirty-four miles forty chains and the lake at thirty-five miles forty chains is found.

Granite Gneiss and Hornblende Gneiss

The lake at thirty-five miles forty chains extends in a northwest and southeast direction and is a little more than half a mile long. The outlet is at the southeast, and it flows into another small lake having the same direction and extending for about a quarter of a mile to the southeast. On the west end of the upper lake is a rounded mass of granite gneiss, while on the north side of the lake about ten chains east of the line is an exposure of gneiss which has a granitic texture. In the hand specimen this rock shows quartz, feldspar and biotite. The rock is quite dark on the exposed surface and this dark color is possibly due in part to smoke from forest fires, though much of it comes from oxidation of iron present in the rock. Under the microscope the minerals composing the rock are found to be quartz, orthoclase, plagioclase, biotite, titanite and secondary chlorite. The orthoclase is considerably kaolinized and shows much limonite included with the kaolin. The plagioclase is apparently andesine. The titanite is idiomorphic and apparently was the first mineral to crystallize. The biotite is largely altered and is giving place to chlorite. The rock is much brecciated and shows cracks, filled with fragmental material, which extend entirely across the thin section. Although this rock has been so shattered, there apparently has been very little gliding along the lines of fracture as crystals of quartz and orthoclase which have been broken and separated by a band of fragmental material about one-tenth of a millimeter wide, show less than one-fiftieth of a millimeter movement in a lateral direction. Except for this brecciation and recementing the rock appears to be a typical granite. Other outcrops of similar material are found a little farther east on the shore of this lake and on the line up to about thirty-six miles forty chains.

At thirty-six miles forty chains the rock changes in its character, and the outcrops up to thirty-seven miles seventy-eight chains show hornblende gneiss together with hornblende biotite gneiss and pegmatite. The greater part of these outcrops is looked upon by the writer as Laurentian, but the hornblende gneiss is considered to be Keewatin.

At thirty-eight miles forty chains is a large exposure of rock composed of biotite schist, biotite granite and hornblende gneiss. This mass of rock is much distorted so

that it is impossible to get the strike and dip, but the ridge runs N. 30° E. In some places the banding of the gneiss corresponds in general direction to that of the ridge, but in other places it extends in an east and west direction. The biotite granite and gneiss are apparently the same in mineral composition and consist of quartz, orthoclase and biotite. The hornblende gneiss is very similar in appearance to that found near the inlet of Quinquaga lage about twenty chains west of the twelve-mile post. It, however, contains only about fifty per cent. hornblende, the balance being made up of orthoclase. This hornblendic material is probably an intrusion of Keewatin in Laurentian gneiss.

A Boulder-strewn area

Five chains farther north is a creek flowing nearly west through a valley which broadens out to the west and northwest into a flat nearly half a mile wide. The soil of this flat is a sandy loam but is strewn with glacial boulders. The entire region here for a mile or two, and in fact most of the way back to the lake at thirty-five miles forty chains, has been stripped by forest fires, and for much of the distance the country is strewn with fallen timber which renders it exceedingly difficult to travel even without a load. The country between this creek and the mountain which looms up at thirty-nine miles twenty-five chains has been almost entirely cleared of forest growth, and at the same time the fallen timber has been burned, so that the nature of the soil could be observed. Although the latter was a fairly good sandy loam, it was covered with boulders, and in all probability represents the condition which would be found in most of the valleys up to this point, were they cleared out.

At thirty-nine miles twenty-five chains on the south side of the mountain is a dike about twelve feet wide cutting biotite granite gneiss. The dike strikes N. 10° E., and dips 85° W. The gneiss strikes about N. 60° E., and dips about 75° S.E. This gneiss is a typical example of the Laurentian gneisses and is composed of quartz, orthoclase and biotite, and in addition small amounts of titanite which are visible to the naked eye. Associated with the gneiss are bands of pegmatite which contain the same minerals as the granite, except that no titanite was observed. The dike is dark green to black, and in the hand specimen is almost felsitic, but lath-like crystals of plagioclase can be distinguished, though none of the other minerals can be determined in the hand specimen. Under the microscope the rock is apparently porphyritic and shows labradorite, augite, quartz and magnetite. The augite is nearly colorless and occurs as the porphyritic mineral through showing no distinct crystal outline. The plagioclase corresponds in angle of extinction to labradorite, and is arranged in stellate groups forming a somewhat intergrown network of lath-like crystals which enclose smaller masses of pyroxene, together with small particles of magnetite and quartz.

Hornblende Schist and Granite

At thirty-nine miles fifty-six chains is an outcrop of hornblende schist interbedded with masses of pegmatite. The exposure extends for about five chains to the north and strikes N. 60° E., dipping 75° S.E. The rock consists of hornblende and orthoclase and has a decided schistose appearance. The hornblende composes about fifty or sixty per cent. of the rock mass, the balance being made up of pink orthoclase and small traces of epidote. This exposure is considered to be Keewatin.

Just west of forty miles ten chains is a low rounded hill composed mostly of granite and pegmatite, enclosing some masses of hornblende schist. This outcrop extends for about twenty-five chains west of the line and again is exposed on a mountain about a mile to the southwest. Several boulders of mottled melaphyre were observed on this exposure which are of interest as being different from any basic rock found in place on the line. The surface of the outcrop at this point has been polished by glacial action, but no distinct striæ were noticed. The granite in the hand specimen shows quartz, orthoclase, biotite, muscovite and a few garnets. The pegmatite apparently has the same mineral composition. The general direction of the ridge is N. 28° E. The

hornblende schist which is enclosed in the granite usually has a strike of about N. 70° E., and a dip of 54° N.W. On comparing this strike and dip with the strike and dip of the hornblende schist about half a mile south of this point, it will be seen that the rock here has been considerably contorted by the intrusion of the granite. In the hand specimen this schist is very compact, and is apparently composed almost entirely of hornblende. In general appearance it is very similar to the hornblende schist found on the Height of Land portage between the Pic and Making Ground rivers, but is a little coarser.[6] Under the microscope the rock is found to be composed of about sixty per cent. of green hornblende, twenty per cent. orthoclase and ten per cent. quartz, and is apparently the same in composition as the outcrop of schist at the head of the Pic river. This ridge of granite enclosing hornblende schist extends to the northeast as a line of low hills.

At forty miles sixty chains is a similar exposure of coarse granite, which is composed almost entirely of orthoclase and quartz, but also contains a small amount of biotite. Enclosed in the granite are large masses of hornblende schist which in some instances are much curved so that they show no characteristic strike and dip. Cutting both the granite and the hornblende schist are three dikes striking N. 47° W., and standing nearly vertical. One of these dikes has apparently been faulted. The hornblende schist at this point is not quite so dark as that found with the last mentioned outcrop, but is composed of about fifty per cent. hornblende, and the balance orthoclase, with a few grains of quartz. It is, however, much the same type of rock except that it is coarser grained, which fact is probably due to slower crystallization, or to the intrusion of diabase which permitted the crystallization to continue for a longer period of time. The diabase shows in the hand specimen a few lath-like crystals of plagioclase, but none of the dark minerals can be identified. In color it is nearly black and its texture is felsitic. Under the microscope it shows labradorite, augite, pyrite, magnetite and quartz. The labradorite forms the typical network of lath-like crystals characteristic of diabase, and the remaining minerals are grouped in the interstices. Certain portions of the rock have solidified without complete crystallization, and show a ground mass of minute particles whose nature cannot be determined. No glassy particles were noticed, but these masses seem to be made up of microlitic particles of the same minerals as the rest of the rock, which on account of rapid cooling could not take on their characteristic crystal form. The granite at this point is considered to be Laurentian, while the hornblende schist is looked upon as Keewatin.

Exposures of granite with similar inclusions of hornblende gneiss are found on the southeast side of the lake at forty-one miles forty chains. The character of the hornblende schist is identical with the last mentioned outcrop, and the granite contains the same minerals and in some places shows a gneissic structure. Other outcrops of this same rock are found at several places on the line up to the forty-three mile post.

At forty-three miles seven chains is an outcrop of pink granite associated with gneiss. The granite shows in the hand specimen quartz, orthoclase and biotite, and of these three minerals the orthoclase apparently composes about sixty to seventy per cent. of the rock mass. Under the microscope the rock shows, in addition to the minerals mentioned above, plagioclase and chlorite. The rock exhibits a brecciation similar to that noted in the granite at thirty-five miles forty chains. The orthoclase is more or less kaolinized and shows considerable ferric oxide. The pegmatite is the same in composition as the granite. This same body of rock extends west of the line and was found in a valley nearly half a mile west.

About five chains west of forty-three miles thirty chains is a fine grained biotite gneiss in contact with a pink granite which is made up almost entirely of quartz and feldspar, but contains a trace of biotite. In the hand specimen the gneiss is very similar in appearance to the granite found at the first mile post on the line, and shows in the hand specimen the same minerals. Under the microscope the rock is found to be

[6] See page 132.

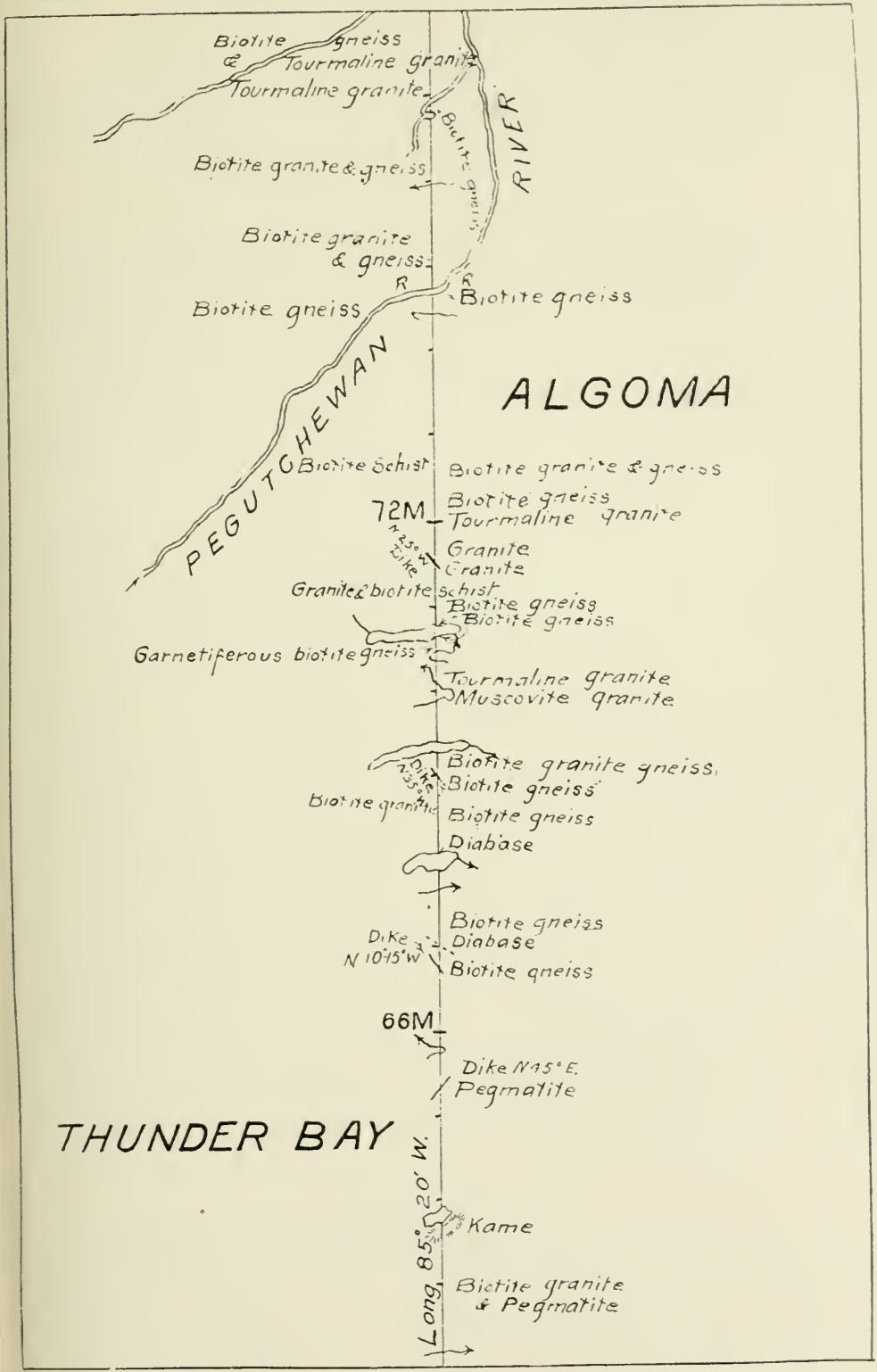

Biotite gneiss & Tourmaline granite
Tourmaline granite
Biotite granite & gneiss
RIVER
Biotite granite & gneiss
Biotite gneiss
Biotite gneiss
PEGUTCHEWAN
ALGOMA
Biotite Schist
Biotite granite & gneiss
72M
Biotite gneiss
Tourmaline granite
Granite
Granite
Granite & biotite schist
Biotite gneiss
Biotite gneiss
Garnetiferous biotite gneiss
Tourmaline granite
Muscovite granite
Biotite granite gneiss
Biotite gneiss
Biotite granite
Biotite gneiss
Diabase
Biotite gneiss
Diabase
Biotite gneiss
66M
Dike N 45° E.
Pegmatite
THUNDER BAY
Long. 85° 20' W.
Kame
Biotite granite & Pegmatite

Plate V.

composed of quartz, orthoclase, plagioclase and biotite. The orthoclase shows comparatively little kaolinization and only faint traces of included ferric oxide. One small crystal of magnetite was observed in the section. The plagioclase is apparently andesine, and some of it shows zonal extinction from about ten degrees to only one or two degrees, which apparently indicates a gradation from andesine to albite.

Laurentian Gneiss and Keewatin Schist

On the lake about a mile west of this point is a large number of exposures of biotite granite which in some cases exhibits gneissic structure. The lake was followed nearly to the southwest end, and all the outcrops noted to the south and west of this point are Laurentian granites and gneisses. About half a mile west of forty-three miles thirty chains the Laurentian gneiss gives place on the north to a compact hornblende schist having a strike which varies from N. 90° E., to N. 70° E. This rock dips to the south. In color the schist is dark greenish gray and is composed of hornblende and feldspar with traces of orthoclase. The schist is made up of particles of hornblende, which are from a quarter of a millimetre to a millimetre across, but the rock is apparently the same in composition as that found on the Height of Land portage at the head waters of the Pic river, and also about thirty-five miles south of Lake Superior falls on the same river, so that it is classed without hesitation as Keewatin.[7]

About five chains farther north biotite schist is exposed, and in this outcrop it is coarser in texture than most of the schists seen up to this point. The strike and dip of this rock are the same as for the hornblende schist, and apparently it is overlying these schists, so that unless it may be looked upon as an overturned fold or part of an overturned fold it would apparently be difficult to group this schist with the Laurentian. The difficulty in continuing the Laurentian to the north except where the rock is granitic in character is somewhat increased by the fact that much of the schist found in the next ten miles contains garnet, and as these rocks are very similar in appearance to rocks of Grenville age found in the Muskoka District, and as garnetiferous biotite schist on Mackay's lake is referred to the Huronian, it would seem reasonable to class these schists at least as Post-Keewatin. On account of the difficulty, however, of making any correlation between the rocks found on the line and rocks of similar mineral composition found in other places the writer has decided to group these biotite schists, whether containing garnet or not, in the Laurentian.

Going from this lake to the long narrow lake which lies just northeast of it an outcrop of Laurentian granite and pegmatite was found on the east side of the lake about half a mile east of forty-four miles sixty chains. In the hand specimen the granite is almost identical in appearance with Barre granite, quartz, orthoclase and biotite being recognizable. Under the microscope quartz, orthoclase, microcline, plagioclase, titanite, biotite and magnetite are seen. The feldspars grade into one another, and in most cases no characteristic angle of extinction can be obtained, as the crystals seem to be developed with zonal characters. In one case, however, a crystal of orthoclase showed at one end an intergrowth with fine lamellæ of plagioclase which extinguished at eight degrees and is evidently andesine. The titanite shows only one particle which is not well crystallized. The feldspars are kaolinized to some extent and the kaolinization progresses more rapidly along the lines of cleavage. The pegmatite shows only quartz, orthoclase and biotite.

Garnetiferous Schist on Bad River

At forty-four miles forty-one chains is an exposure of pink granite which probably belongs to the same body as the last mentioned, and this gives place at forty-five miles twenty-eight chains to a biotite schist which strikes east and west and dips 60° S. This schist was traced about three miles east of the line and forms the north and south banks of the river for more than two miles, the river's course for this distance being almost

[7] See pp. 132 and 134.

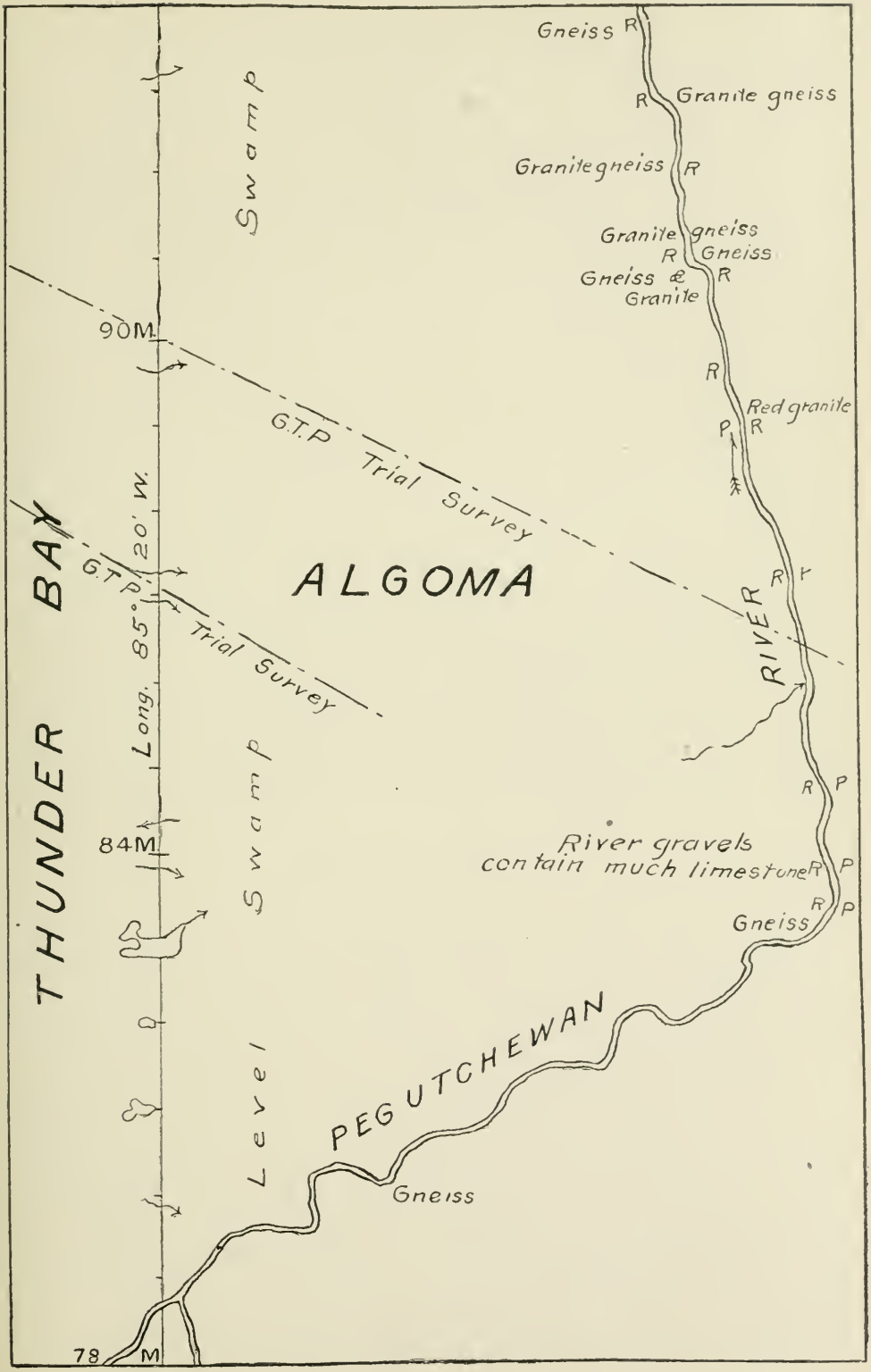

Gneiss R
R Granite gneiss
Granite gneiss R
Granite gneiss
R Gneiss
Gneiss & Granite R
R
Red granite
P R
Swamp
90M
G.T.P Trial Survey
THUNDER BAY
ALGOMA
Long. 85° 20' W.
G.T.P. Trial Survey
RIVER
R P
84M
River gravels contain much limestone R P
R P
Gneiss
Swamp
Level
PEGUTCHEWAN
Gneiss
78 M

Plate VI.

due east. About three miles east of the line the river turns squarely to the north, cutting across this outcrop of schist and forming a rapid about three feet high at this point. This rapid, however, was easily run in a canoe, and it was possible to come up by hard paddling. The river was followed about three miles north of this point, and the surrounding country was gently rolling, but showing at frequent intervals on the west side of the river outcrops of gneiss

In going east from the line the schist was found about ten chains away to be composed of quartz, biotite and orthoclase. In texture it is coarse gneissic. About fifty chains east of the line the texture of the rock is fine gneissic, and in addition to the biotite, quartz and feldspar, minute crystals of pyrite were observed. About a mile and a half east of the line the outcrops consist of alternating bands of biotite schist and granite. In the hand specimen the schist appears fine grained and shows biotite, orthoclase, quartz and garnet. The granitic bands are made up mostly of orthoclase and quartz with small amounts of biotite, and at their contact with the schist show a considerable amount of almandite garnet. At the rapid where the Bad river turns north the schist is composed of quartz, orthoclase and biotite, and in this place no garnet was found. The rock on the line is compact, and although darker than some of the biotite schists which are referred to the Laurentian, it has the same mineral composition, being made up of biotite, quartz, orthoclase and andesine. This band of schist may be looked upon as the southern limit of garnetiferous biotite schist, and although schist which is free from garnet is found at many places within the region where the garnetiferous schists are abundant, it seems to the writer that these schists containing garnet should be separated from the Laurentian, although with the present state of knowledge this cannot yet be done. In some cases it is more than likely that even schists which contain no garnet but are otherwise like the garnetiferous schists should be grouped as post-Keewatin.

An outcrop of biotite schist which in the field appears identical with the rock found at forty-five miles thirty chains occurs on the line at forty-five miles fifty-one chains Another outcrop consisting of bands of biotite gneiss and granite appears at forty-six miles ten chains and continues about ten chains north. The strike of these rocks is almost east and west. In the hand specimens the gneiss shows quartz, orthoclase and biotite, while the granitic portions are almost entirely feldspar with small amounts of quartz and traces of biotite.

Pegmatite and Biotite Schist

At forty-six miles thirty-two chains coarse pegmatite consisting of quartz, orthoclase, biotite and muscovite is found. The color of the rock is pink or flesh-color. At forty-six miles forty-four chains the rock is granitic in texture and is composed of quartz, orthoclase, biotite, a little muscovite and almandite garnet. This same ridge of rock extends to about forty-six miles fifty-two chains, and there exhibits decided gneissic structure, being composed of quartz, orthoclase and biotite. The strike is N. 70° W., while it dips 60° S.W. About twenty feet west of the line on the north shore of a small lake at forty-six miles sixty chains the summit of a tilted anticlinal fold was noted. Part of the rock had been removed by some agency, leaving a small opening which permitted of measurement of strike and dip. The dip of the north and south sides, a foot or two below the summit of the fold, was found to be the same and measured 70° S.W. The strike at the north side is N. 75° W., while that of the south side is N. 65° W. The summit of the fold is sharply tilted and dips 40° N.W. The rock at this point is biotite gneiss and a coarse biotite granite. The same rock is found on the summit of the mountain at the forty-seven mile post and exhibits a decided gneissic character, showing a strike of N. 70° to 75° W. This rock is not much altered and is composed of quartz, orthoclase, plagioclase and biotite. No thin section was made, but the feldspars appear bright and show little trace of kaolinization. In one specimen small particles of magnetite were observed. This exposure extends about fifteen chains

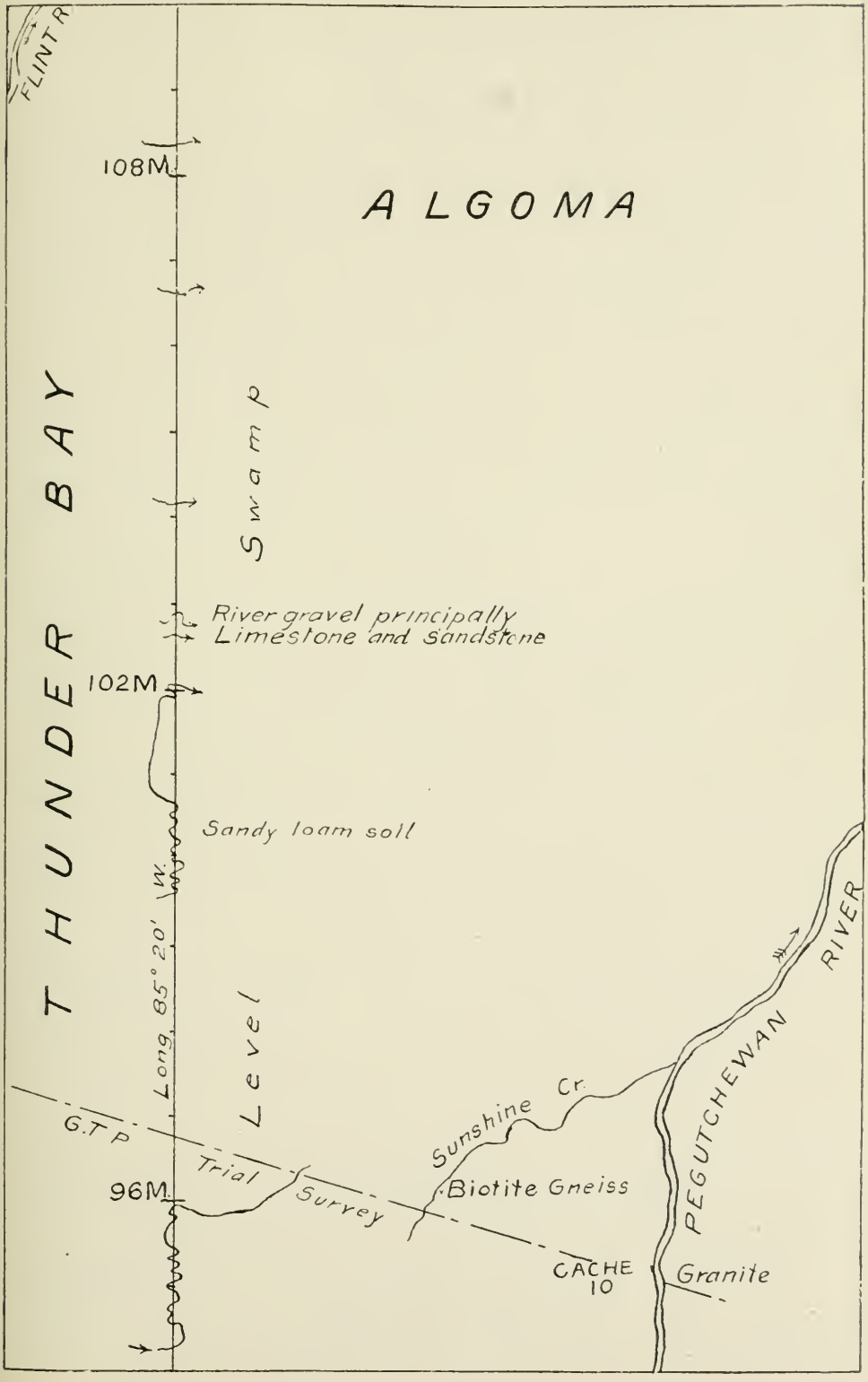

FLINT R.
108M.
ALGOMA
THUNDER BAY
Swamp
River gravel principally
Limestone and sandstone
102M.
Sandy loam soil
W.
Long. 85° 20'
Level
G.T.P.
Trial
Survey
96M.
Sunshine Cr.
Biotite Gneiss
CACHE
10
Granite
PEGUTCHEWAN
RIVER

Plate VII.

north of the forty-seven mile post and ends in a nearly vertical cliff at the north. The rock was followed about a quarter of a mile to the east, and was there found exposed as a vertical cliff about a hundred and fifty feet high.

At forty-seven miles thirty chains is an outcrop of fine pegmatite or coarse granite, showing crystals of orthoclase and quartz from three-quarters of an inch to an inch across. The outcrop is a small one, and does not extend more than a chain. It apparently was not extended to the east and west, but merely formed a small elevation in the midst of the marsh. Another elevation four chains to the north is made up of biotite gneiss showing quartz, plagioclase and biotite, and having a strike of N. 85° W., dip 80° S. Almandite garnet is present to some extent in certain bands of this rock, but is not abundantly distributed throughout the mass. Biotite gneiss of somewhat granitic texture, but otherwise the same as the last outcrop, is found at forty-seven miles fifty-two chains, and has the same strike and dip as that last mentioned.

At forty-eight miles twenty chains biotite schist containing biotite, quartz and orthoclase, again outcrops, and six chains farther on is a schist which is apparently the same. This latter outcrop strikes N. 85° N.W., and dips 70° N.E. The rock in addition to the minerals found at forty-eight miles twenty chains contains almandite garnet in masses from a quarter of an inch to a half an inch across. Associated with the garnetiferous schist are bands of granitic material composed of quartz, feldspar and biotite. The same rock was again found at forty-eight miles forty-five chains with strike N. 50° W., dip 88° N.E.; also at forty-nine miles one chain, forming a ridge which extended about five chains west of the line and about fifteen chains east of the line. At the latter point the rock was so much contorted that strike and dip could not be taken, but the outcrop extends in a northeast by southwest direction, and ends in a precipitous cliff about fifteen chains east of the line. In texture the rock varies from gneissic to coarse granitic and consists of bands made up of quartz, feldspar and garnet, with or without biotite, alternating with bands composed of quartz, feldspar and biotite. These rocks show a greater percentage of garnet than was observed in any rocks up to this point, and are very similar to the Grenville gneisses.

At forty-nine miles sixty-six chains another outcrop of garnetiferous biotite gneiss forms a hill about five chains wide. The exposure extends about ten chains west of the line and five chains east. The strike of the rock is N. 85° W., and the dip 70° S.W. The rock is distinctly banded, the lighter bands being almost free from biotite and consisting principally of feldspar, quartz and a few scattered garnets, while the darker bands contain possibly twenty per cent. of biotite, an equal amount of garnet and the remainder quartz and orthoclase. Under the microscope the light bands show orthoclase, plagioclase, quartz and biotite. The orthoclase is considerably kaolinized, while the plagioclase has somewhat zonal extinction and probably is partly albite and partly andesine. No garnet was noted in the thin section of the light band, although it is present in crystals an eighth of an inch in diameter in the hand specimen. The dark bands show orthoclase, quartz, andesine, biotite and almandite. The orthoclase is somewhat kaolinized. A few particles of pyrite appear in the dark band, but none were found in the lighter material. This rock continues to fifty miles thirty chains as a series of ridges. At the latter point the banded structure is exceptionally well developed, showing bands from an inch to four inches across with sharp lines of demarcation. Here the strike varies considerably, and the bands are much curved. A dike about two inches across is found a little west of the line at this point, but as the entire length of the dike was only about four feet, and no other exposure could be found in the vicinity, no sample was taken.

At fifty miles fifty chains biotite gneiss outcrops, and again at fifty miles seventy-five chains garnetiferous biotite gneiss is exposed. Again at fifty-one miles twenty-five chains and about five chains west of the line. there is an outcrop of biotite gneiss. In this outcrop no garnet was noticed. About two chains west of the line at fifty-two miles eighteen chains a small outcrop of garnetiferous biotite gneiss appears in the

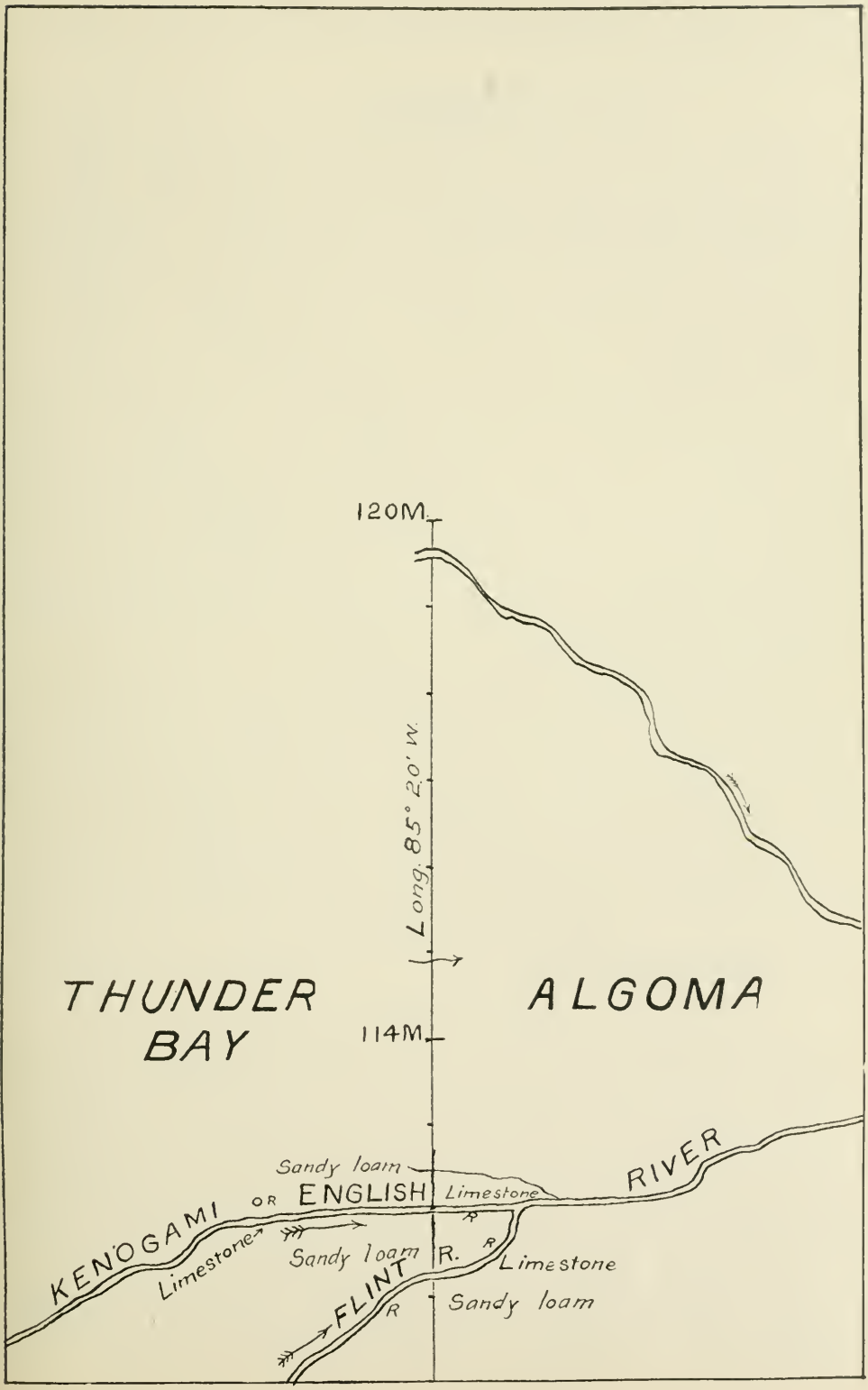

120M.
Long. 85° 20' W.
THUNDER BAY
ALGOMA
114M.
Sandy loam
KENOGAMI OR ENGLISH
Limestone
RIVER
Limestone
Sandy loam
R.
R
Limestone
FLINT
R
Sandy loam

Plate VIII.

midst of a swamp. The strike is N. 80° E., and the rock is much folded, so that no characteristic dip could be obtained.

An Agricultural Area

At fifty-two miles forty chains a pink granite containing orthoclase and quartz and a very little biotite forms a small knoll in the midst of a spruce swamp and extends six chains to the north. This is the last outcrop of rock to be found up to nearly the fifty-seven mile post. The country between these points consists of sandy knolls and spruce swamps, and just west of fifty-three miles a lake about a mile in diameter gives an opportunity of seeing the general character of this district. From this lake the country rises gradually in all directions, presenting a gentle rolling effect, and inasmuch as the soil is sandy loam it will probably furnish ten or fifteen square miles of good agricultural land.

About a mile west of fifty-six miles sixty chains on the north shore of the lake at that point is an outcrop of garnetiferous biotite gneiss having strike of N. 80° E., dip 80° S.E. This rock is very similar in appearance to the Grenville, but for reasons heretofore stated[5] it is referred to the Laurentian. The rock varies from a coarse granitic to a very fine grained schistose texture. The coarser material shows a somewhat mottled appearance, and is made up of orthoclase, quartz and biotite with occasional inclusions of garnet. The feldspar and quartz are grouped together, and are entirely surrounded by biotite, as if the rock were formed from a sedimentary rock composed of pebbles of argillaceous sandstone embedded in clay, which had been submitted to heat and pressure so as to bring about a re-crystallization of the constituent materials. Garnets up to an inch across are found in this rock. The fine grained schist is similar in composition to the granitic rock, but the minerals are distributed more uniformly, and do not give a mottled appearance.

At fifty-seven miles nineteen chains an outcrop of diabase was found which apparently had a strike of about N. 45° W. The exposure consists of two or three isolated masses about five feet wide and twenty-five feet long. No contact could be found with other rock, as the diabase was bordered on both sides by sandy loam, but as the rock was not particularly rounded it seemed to be a distinct outcrop and not isolated boulders. The rock is considerably weathered and in the hand specimen is dark greenish gray. Megascopically, it exhibits lath-like crystals of plagioclase and pyrite, but the other minerals could not be distinguished. Under the microscope it is found to consist of labradorite, augite, magnetite, pyrite, quartz and secondary calcite and chlorite. The labradorite shows the characteristic network of polysynthetically twinned lath-like crystals. It is considerably decomposed, and shows the formation of much secondary calcite. The other minerals are arranged in the interstices of the labradorite network. The augite is altering to chlorite.

A Lake Shore of Gneiss and Granite

At fifty-eight miles thirty-six chains is a lake which is about three or three and a half miles long and about a mile in greatest width. At the point where the line crosses the lake the width is only about ten chains, and this is about the centre of the lake from east to west. On the south shore at the point where the line crosses the lake is an outcrop of biotite gneiss, and a coarse granite which in the hand specimen shows quartz, orthoclase, muscovite, biotite and apatite. Under the microscope it exhibits the same materials. The shores of the lake show many outcrops of biotite gneiss alternated with coarse granite, and the strike is uniformly east and west with a nearly vertical dip. The country is low and rolling and heavily timbered. On the north shore of the lake about a mile west of the line a dike about a hundred and fifty feet wide is found striking N. 20° E. and having a nearly vertical dip. At the contact of this dike with the adjoining gneiss the rock is very compact, and in the hand

[5] See p. 101.

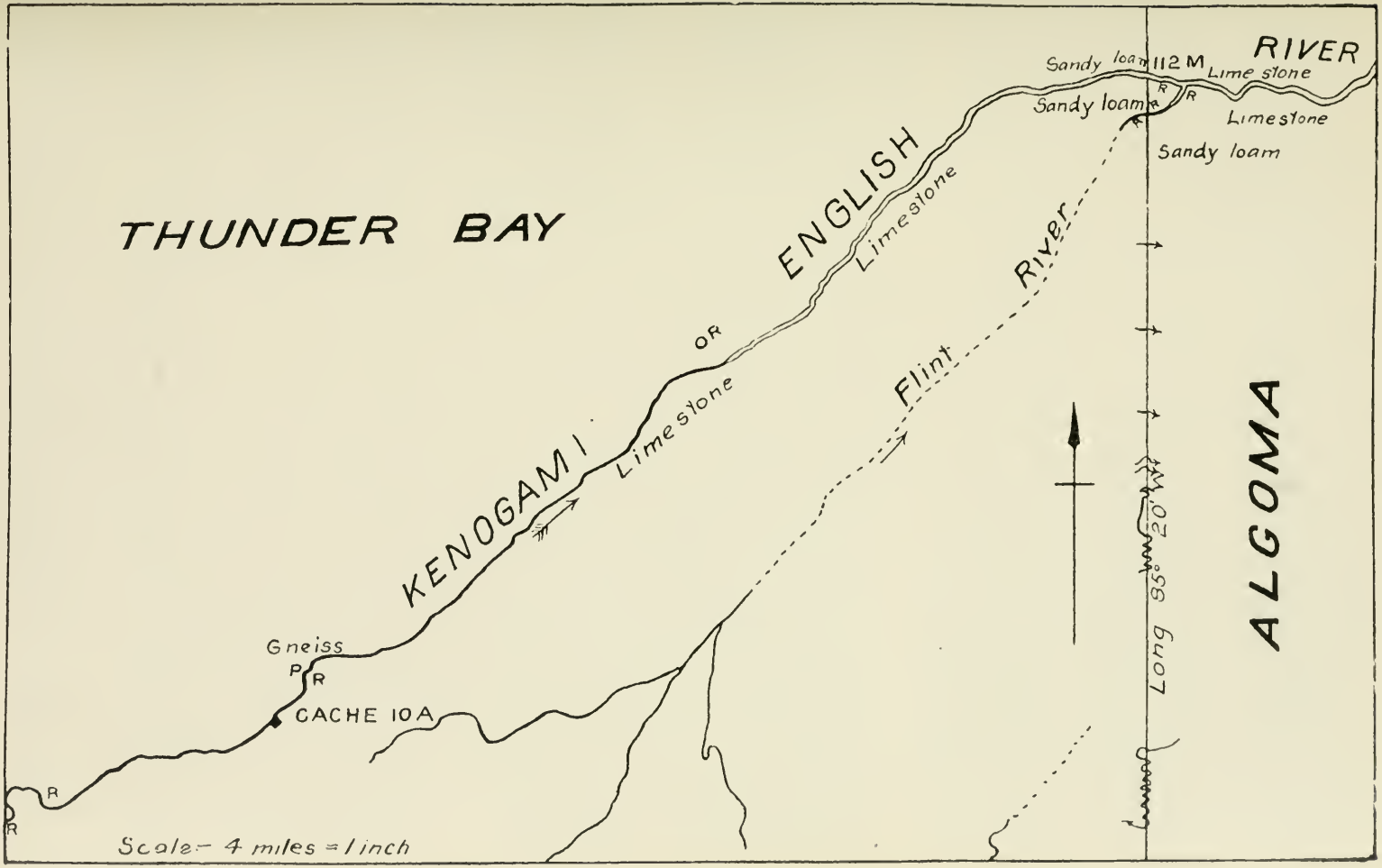

THUNDER BAY
ENGLISH
RIVER
Sandy loam
112 M
Lime stone
Sandy loam
Limestone
Sandy loam
Limestone
River
Flint
OR
KENOGAMI
Limestone
Gneiss
CACHE 10A
Long 85° 20' W
ALGOMA
Scale- 4 miles = 1 inch

Plate IX.

specimen no minerals can be distinguished. In color it is black, but has a rusty coating due to the oxidation of iron present in the rock. About the middle of the dike the rock is coarsely granitic and exhibits plagioclase, augite and magnetite in the hand specimen, but all gradations in texture between these two extremes can be found. This dike furnishes an exceptionally good example of the effect of slow cooling on the formation of a coarse crystalline rock. Under the microscope the fine grained material near the contact is found to consist of lath-like crystals of labradorite in a dark ground mass of augite, chlorite and magnetite. A section of the coarser material exhibits the same minerals, but on account of the weathered condition of the rock it was not possible to get sections showing the texture.

No outcrop of rock was found between this lake and the lake at sixty miles thirty chains either on the line or in following the creek connecting the two. On the north shore of the latter lake, however, is an isolated rounded outcrop of gneiss which is similar in appearance to that found on the lake at fifty-eight miles thirty-six chains. Outcrops of similar gneiss occur at sixty-one miles twenty chains and sixty-one miles forty chains, and at the latter place it has a strike of N. 80° E., and a dip of 90° Thirty chains farther north this same rock is found.

Granite and Pegmatite at 63 Miles

At sixty-two miles seventy chains granite and pegmatite are exposed and vary in color from pink to gray. Both rocks show in the hand specimen quartz, orthoclase, biotite and muscovite. The exposure exhibits a glacial furrow about eitghteen inches wide and having a direction of N. 45° E. No other rock was observed for more than three miles, but at sixty-three miles sixty chains a sandy ridge rises above the level of the swamp to the south and forms the southern shore of a small lake. The ridge contains pebbles up to an inch in diameter mingled with sand, and has a direction of N. 35° E. Inasmuch as this direction is nearly the same as most of the glacial markings found on the line, the deposit is regarded by the writer as a kame.

A short distance east of the line, at sixty-five miles twenty-eight chains is an exposure of pegmatite composed of quartz, orthoclase, and biotite. The rock is weathered nearly white, and is rounded by glaciation, but shows no distinct glacial scratches. Another outcrop of this same rock is found on the line at sixty-five miles thirty chains. These outcrops are ridges extending N. 35° E., and it is possible that the direction of the ridge is due to glacial action, as it is the same as that noted in the kame at sixty-three miles sixty chains, though it seems more likely that bands of softer material in the rock may have had this direction and thus caused the ice to take the same course.

A dike of diabase showing an outcrop about forty feet long and six feet wide is found at sixty-five miles thirty-five chains. The exact strike and dip could not be obtained on account of the vegetation covering the rock, but the general direction is northeast and southwest. The surface is considerably weathered to a rusty brown, but the less weathered portions are dark greenish brown, and show distinct diabasic texture with its characteristic network of lath-like plagioclase enclosing the dark minerals. Under the microscope the rock is seen to be made up of labradorite, augite, biotite and magnetite. The labradorite is in typical lath-like crystals, polysynthetically twinned, and is partially altered to calcite. The augite is bright and is in the interstices between the crystals of labradorite. The biotite is present in very small amount, and is partially altered to chlorite.

At sixty-six miles fifty-three chains is an outcrop of biotite gneiss with strike N. 45° E., dip 80° S.W. This outcrop consists of alternating bands of dark schist and lighter colored granitic material, and is probably Laurentian.

Diabase at 67 Miles

At sixty-six miles sixty-five chains is a large outcrop of diabase, which extends for several chains each side of the line. The strike is N. 10°-15° W., but the exact direction could not be determined, as the contact with the gneiss could not be seen. In texture

the rock is granitic, and is weathered so that the hand specimen has a reddish brown color. Plagioclase, magnetite, pyrite and augite are visible in the hand specimen. Under the microscope the feldspar is seen to be hypidiomorphic labradorite, forming a network of lath-like crystals enclosing in its interstices augite, biotite, magnetite and a very little quartz. Pyrite was not found in the thin section, although seen in one or two places in the hand specimen.

At sixty-seven miles is a line of boulders or isolated outcrops of diabase, extending in a northwest and southeast direction. No contact was found with other rock and in consequence it cannot be stated positively that there is a dike at this point, but the writer is of the opinion that such is the case. The rock is fine granitic in texture, and shows the same general appearance as the last mentioned except that it is not so brown, and under the microscope the same minerals are found with the same characters, with the exception that quartz was not identified.

At sixty-seven miles seven chains is an exposure of biotite schist of the same character as that noted at sixty-six miles fifty-three chains, and having the same strike.

At sixty-eight miles twenty-five chains is an outcrop of diabase about six feet across, but no extension of the outcrop could be found in the woods near by, so that it is possibly only a large boulder. It has the same characters as the diabase at sixty-seven miles.

Biotite Gneiss and Garnetiferous Granite

Biotite gneiss, both coarse banded and granitic, is found at sixty-eight miles forty chains, sixty-eight miles fifty-five chains, sixty-eight miles seventy chains and sixty-eight miles seventy-five chains. At the last mentioned outcrop the rock is coarsely banded, the dark bands consisting principally of biotite with orthoclase and some quartz, while the light bands are gneissic and are composed mainly of orthoclase and quartz with biotite in small quantities. This rock strikes N. 83° E., and dips 80° S.E. Cutting the gneiss at this point is a dike about one hundred and fifty feet wide, with a strike of N. 35° W., and dip nearly 90°. The rock is dark colored and varies in texture from compact to fine granitic. In the hand specimen the coarser rock shows plagioclase, augite and magnetite. Microscopically, it is found to be composed of an interlaced network of hypidiomorphic labradorite polysynthetically twinned, while in the interstices are augite, biotite and magnetite. The compact material when examined under the microscope is seen to be microporphyritic, with phenocrysts of lath-like labradorite and augite. The ground mass is dark, and is composed of biotite, magnetite and a large mass of unindividualized material which appears somewhat chloritic.

At sixty-nine miles fifteen chains biotite granite gneiss is again found, and the same rock is again seen fifteen chains further north on the south shore of a small lake. These exposures have a coarse banded appearance, and are probably Laurentian. At sixty-nine miles seventy-five chains is a coarse granite made up of orthoclase, quartz, muscovite and magnetite. This outcrop extends N. 80° E., but does not exhibit gneissic texture. At seventy miles ten chains is a granite showing in the hand specimen quartz, orthoclase, plagioclase, biotite and occasional specimens of tourmaline. The surface of the exposure is rounded and polished by glacial action, but no striæ were observed. The outcrop is a large one and extends for about fifteen chains east of the line. Most of the rock is rather coarse grained, many of the crystals being nearly half an inch across. Along with this material is a fine grained granite which shows under the microscope all the minerals found in the coarser material, with the exception of tourmaline.

At seventy miles fifty chains is a gneissic outcrop of garnetiferous granite and a biotite schist. The outcrop extends about eight chains north on the line and about fifteen chains east, while the extension to the west is about three or four chains. This rock strikes N. 80° E., and the dip is 75° N.W. The surface of the rock is rounded, apparently by glacial action, and although the surface is much weathered, yet it is not broken up to any extent, so that considerable difficulty was experienced in getting

samples. The granitic bands are light colored, being composed of quartz, white feldspar, a small amount of biotite, and a few small purple garnets which show no trace of decomposition and are apparently almandite. No thin section of this rock was made, and it is uncertain whether the feldspar is white orthoclase or albite. The schistose bands are composed of quartz, orthoclase, biotite and chlorite.

At seventy miles sixty chains is a lake which shows exposures of biotite gneiss on the north and south shores. The direction of the lake is N. 70° E., and at the east end is a large flat of two or three hundred acres overgrown with swamp grass. The rock at this lake is biotite gneiss, and its strike is N. 80° E.

At seventy miles seventy chains is a gray biotite gneiss varying from fine schist to rock which is almost granitic in texture. The granitic bands are gray and show in the hand specimen biotite, feldspar and quartz. Under the microscope the rock is found to consist of quartz, orthoclase, microcline, plagioclase which approaches andesine in angle, biotite and muscovite. This outcrop strikes nearly east and west, and continues on the line nearly to the seventy-first mile post.

Exposures of Granite

At seventy-one miles ten chains is a ridge of granite which varies in texture from a coarse pegmatite to a fine granite. It is bordered on the north by biotite schist and the outcrop extends N. 85° E., for a distance of more than twenty chains east of the line In places the schist is found included in the granite. The granite and pegmatite show in the hand specimen orthoclase, quartz and biotite. Under the microscope the biotite is seen to be almost entirely unaltered. The remaining minerals are shown to be quartz, orthoclase, microcline, plagioclase which shows zonal extinction, and a little muscovite. No sample of the schist was taken, but it is dark and consists of more than fifty per cent. biotite, with the remainder orthoclase and quartz. This exposure is so polished by glacial action, that in many places it is extremely difficult to maintain a foothold, but no glacial striæ were observed.

At seventy-one miles thirty chains an exposure of granite, like the last mentioned, is found on the west side of the line, and although the ground is high at the east of the line the rock was not found outcropping on that side.

At seventy-one miles thirty-five chains a dike cuts the granite, and has a strike of N. 25° W. The width of this dike is from one hundred and twenty-five to one hundred and fifty feet. In the hand specimen the rock is mottled, particularly in the weathered portions where the feldspar shows a brownish tinge. In the unweathered portions the rock is dark greenish gray, and exhibits lath-like crystals of plagioclase, some magnetite and augite. Under the microscope the rock is found to be made up of an interlaced network of hypidiomorphic labradorite, with augite and magnetite filling the interstices. A small amount of biotite altering to chlorite is observed. The augite is fairly fresh, but around the edges is altering to chlorite.

At seventy-one miles thirty-seven chains granite like that last mentioned again appeared, the outcrop extending about fifteen chains north and for some distance each side of the line. The rock, however, is not all exposed, as there is considerable timber growing upon it, and much of it is covered by moss and soil.

At seventy-two miles is an exposure of granite about one chain wide and extending about five chains east and west of the line. The rock varies in texture from coarse to fine granitic, and in the hand specimen shows quartz, orthoclase, biotite and black tourmaline. Under the microscope the rock is seen to be composed of quartz, microcline, plagioclase with zonal extinction, biotite and muscovite. The feldspars are altered in a large measure to kaolin, and apparently the kaolinized material is due to the decomposition of orthoclase, although no characteristic orthoclase is identified in the slide. The other feldspars are bright, and show almost no trace of decomposition. Although the hand specimen shows good crystals of tourmaline, none of this mineral was found in the thin section.

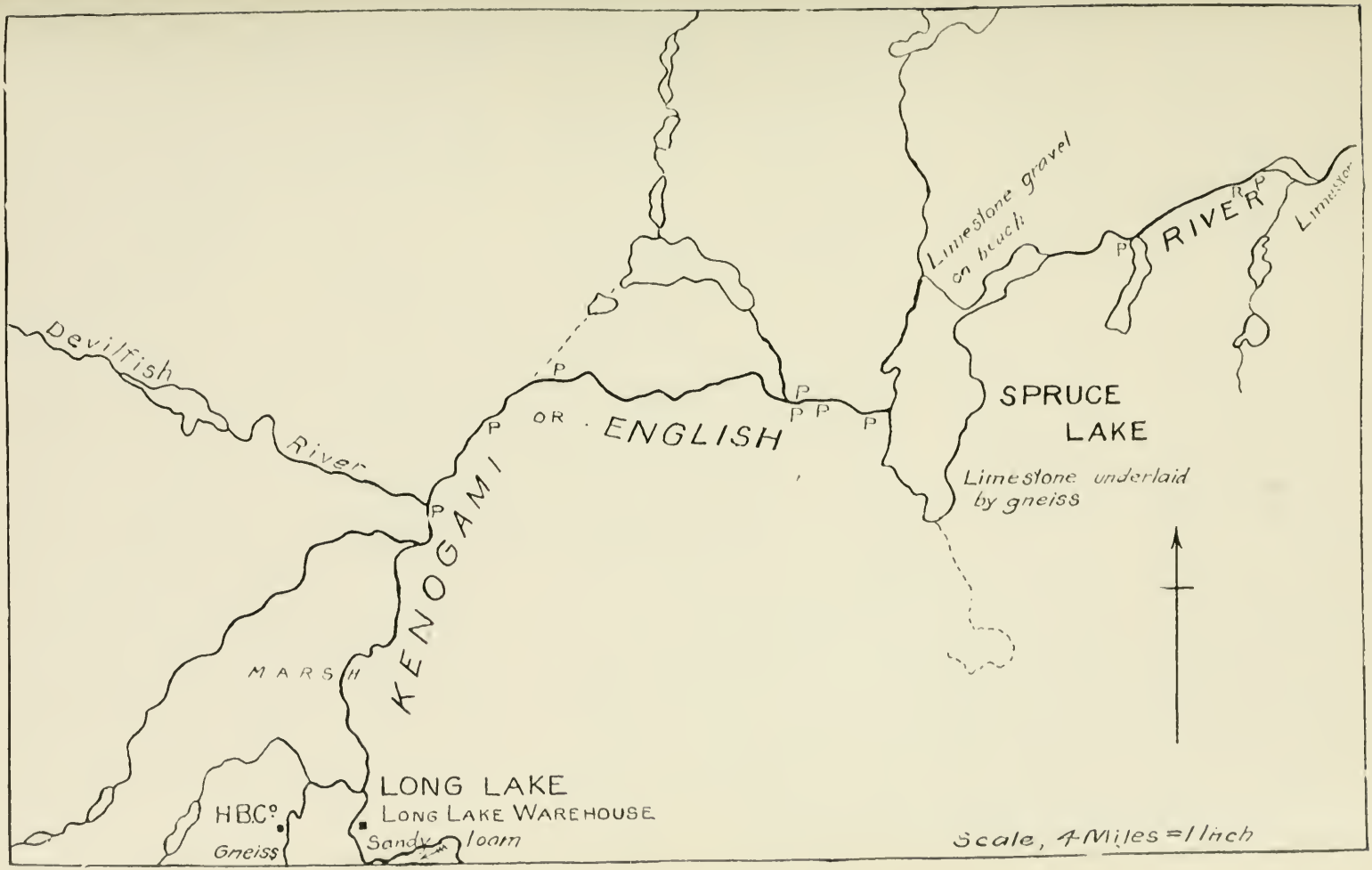

Devilfish River
KENOGAMI OR ENGLISH
MARSH
Limestone gravel on beach
RIVER
Limestone
SPRUCE LAKE
Limestone underlaid by gneiss
LONG LAKE
LONG LAKE WAREHOUSE
H.B.C°
Gneiss
Sandy loam
Scale, 4 Miles = 1 Inch

Plate X.

At seventy-two miles ten chains is an exposure of biotite schist banded with granite and having a strike nearly east and west.

Extending from seventy-two miles forty chains to seventy-two miles fifty chains is a granite containing inclusions of biotite gneiss. This granite varies in texture from a fairly coarse pegmatite to fine granite, and shows in the hand specimen orthoclase, quartz, muscovite and tourmaline. Under the microscope, the rock is found to consist of quartz, orthoclase, plagioclase approaching albite in angle, and blue tourmaline. No muscovite was found in the thin section, and it is abundant only in the pegmatitic portions of the rock.

At seventy-two miles fifty-six chains the granite gives place to biotite schist with strike N. 70° W., dip 78° S.W. No outcrop of rock was found between this point and the south branch of the Pegutchewan river, but about twenty chains east of the line at seventy-four miles sixty chains is a ridge of granitic rock about two hundred feet high, which extends in a northeast and southwest direction. At seventy-five miles three chains is an exposure of granite and gneiss of similar character. Both these rocks are banded and are made up of orthoclase, quartz and biotite.

At seventy-six miles thirteen chains is an outcrop of granite and biotite schist having the same character as the last.

At seventy-six miles seventy chains is a ridge of granite and gneiss two chains east of the line. This ridge is about a hundred feet high and extends nearly north and south. The strike of the rock, as nearly as could be ascertained in view of its contorted nature, is about N. 60° W. The rock varies in texture from coarse to fine granitic. The coarser bands are made up almost entirely of orthoclase and quartz, with small amounts of biotite. The finer grained material contains the same minerals, but the biotite comprises about thirty per cent. of the rock.

At seventy-seven miles a granite which is apparently the same in composition as that seen at seventy-two miles is found. With this granite is gneiss with strike N. 75° W., and dip 85° N.E. Twenty-three chains farther north is another outcrop of similar material with strike N. 50° W., dip 80° N.E. The rock at this place consists of bands of pegmatite and biotite gneiss. The gneiss is composed of biotite, quartz and orthoclase, while the pegmatite contains in addition to these constituents black tourmaline. This is the last rock outcrop found on the line south of the English river.

Down the Pegutchewan River

At seventy-eight miles fifty-four chains the line crosses the north branch of the Pegutchewan river, and from that point to the English river the country is nearly level and is covered by a dense spruce swamp. On reaching the Pegutchewan river it was found that our supplies would not be sufficient to take us more than twenty miles, and in consequence the writer in company with Mr. Mitchell and Mr. Wm. Gregory started down the Pegutchewan river with provisions for a week, in search of supplies. On account of the necessity of travelling rapidly it was impossible to make any study of rocks found. At the point where the line crosses the river the current is swift and the stream very deep.

For a distance of about twenty miles the stream has a meandering course, and flows through a country which is approximately level. The banks of the river are clay covered with sandy loam and sand, and this country will when cleared make an excellent agricultural region. The shores are burned to some extent and on these old burns are groves of Banksian pine, balm of Gilead, birch and poplar. These burned patches seldom reach to the river's bank, but a fringe of large trees is found nearly the whole distance down the river. About four or five miles east of the line and again about ten miles east of the line, outcrops of gneiss were observed, the first being south of the river, and the latter near the point where the river turns north. Soon after the river turns north there are two rapids with a total fall of about twenty-five feet, which will furnish good water-power. At the foot of the lower rapids a large number of

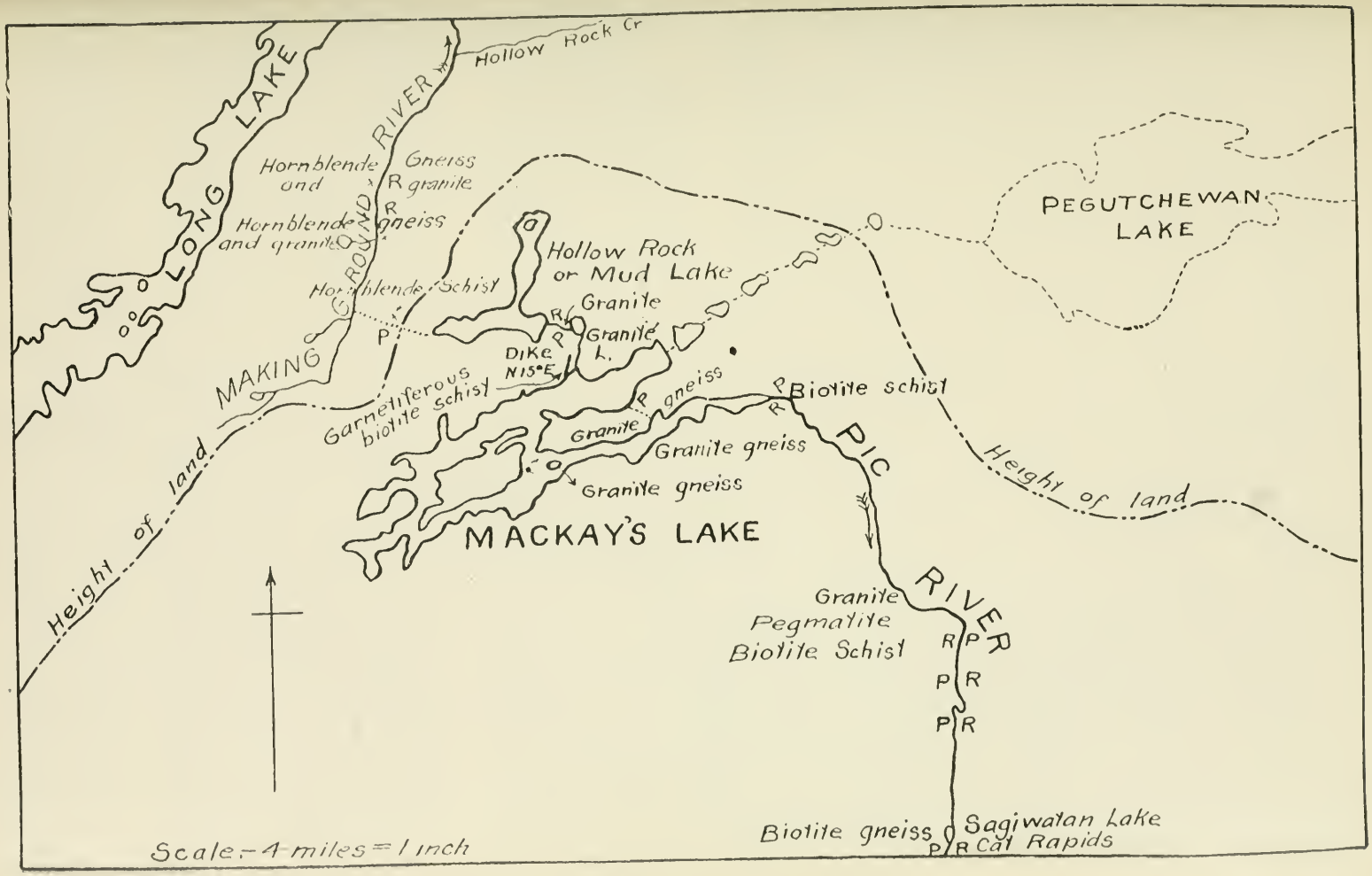

LONG LAKE
Hollow Rock Cr
GROUND RIVER
Hornblende and Gneiss
Granite
Hornblende gneiss
Hornblende and granite
Hornblende Schist
Hollow Rock or Mud Lake
Granite
Granite L.
Dike N15°E
MAKING
Garnetiferous biotite schist
Biotite schist
gneiss
Granite
Granite gneiss
Granite gneiss
PEGUTCHEWAN LAKE
Height of land
Height of land
MACKAY'S LAKE
PIC RIVER
Granite
Pegmatite
Biotite Schist
Biotite gneiss
Sagiwatan Lake
Cat Rapids
Scale:-4 miles=1 inch

Plate XI.

limestone pebbles of Lower Devonian age were observed, and rocks of similar character were frequently noticed in the river gravels from this point north; in many cases these rocks comprised more than half the river gravel, and although no outcrop of this rock was found in this vicinity, it is the opinion of the writer that the whole flat between the Pegutchewan river and the English river was at one time, if not at the present, underlain with this limestone. The river from this point to the cache of the Transcontinental Railway Company is shallow, and has many rapids, and because of its character it gets the Indian name Pegutchewan, or Shallow Current river. About six miles east of the ninety-two mile post is a rapid with a fall of about twenty-five to thirty feet. On the west bank at this point is an exposure of gneiss and granite with inclusions of gneiss. About half a mile farther north is another outcrop of gneiss on the east bank. Another rapid is found about a quarter of a mile to the north of this last outcrop, and at the foot of the rapid is an exposure of granite gneiss which outcrops on both sides of the river. Another rapid was found about half a mile farther north with an outcrop of granite gneiss at the foot, and still another outcrop of gneiss was noted on the east shore after paddling for about ten minutes. Two more shallow rapids which were run with the canoe were just below this last outcrop, and finally at about six miles east from the ninety-five mile post we came to cache 10 of the Transcontinental Railway Company. Just opposite the cache on the east side of the river is an outcrop of granite nearly a hundred feet high and with a face on the river about two hundred feet broad. The forest here has recently been burned, and in consequence the rock shows a rusty color, due to a change in the condition of the iron present. In texture it is fine granitic, and shows in the hand specimen quartz, orthoclase, a few striated crystals of plagioclase, and biotite. Microscopically, the rock is found to consist of biotite, quartz with inclusions of zircon, orthoclase altering to kaolin, microcline, and plagioclase which approaches andesine in angle.

In coming down the river although there is considerable fall it was noted that the general level of the country away from the river bank remained about the same.

About three miles west of cache 10 is an outcrop of biotite gneiss, apparently of Laurentian age. From this point to the Flint river no rock of any sort was seen. In a few places the soil was examined and found to be a sandy loam. On the banks of streams this loam is seen to be underlain with a yellowish clay. On the small river which crosses the line at about one hundred and three miles, the river gravels consist principally of limestone, sandstone and diabase, although scattering pebbles of granite are seen. The banks consist principally of yellow clay which is covered with sandy loam.

Limestone on Flint and English Rivers

On going down the Flint river a buff limestone was observed in the bed of the stream, but no outcrop was seen which was accessible. This limestone was found in place, however, on the English river for about sixteen miles above its junction with the Flint river, and samples were taken in two places. These samples contained three fossils which have been identified as *Atrypa reticularis*, *Stropheodonta*, *cf. pattersoni*, and *Rhipidomella sp.* These in connection with those listed by Mr. Neelands[9] would probably determine this limestone as Lower Devonian.

The crystalline rocks of the English river have been described by Mr. Neelands, so that the writer made no attempt to study them on the trip up the river. The occurrence of limestone was noted about half way between cache 10A of the Transcontinental railway and Spruce lake, and the shores of the lake showed several gravelly beaches containing large quantities of limestone pebbles.

Making Ground and Pic Rivers

On leaving Long lake we went up the Making Ground river for about twelve miles to the Height of Land portage. At the foot of the first rapids on this river is a compact hornblende gneiss associated with granite, and about two miles farther up is another

[9]Rep. Survey and Exploration Northern Ontario, 1901, p. 151.

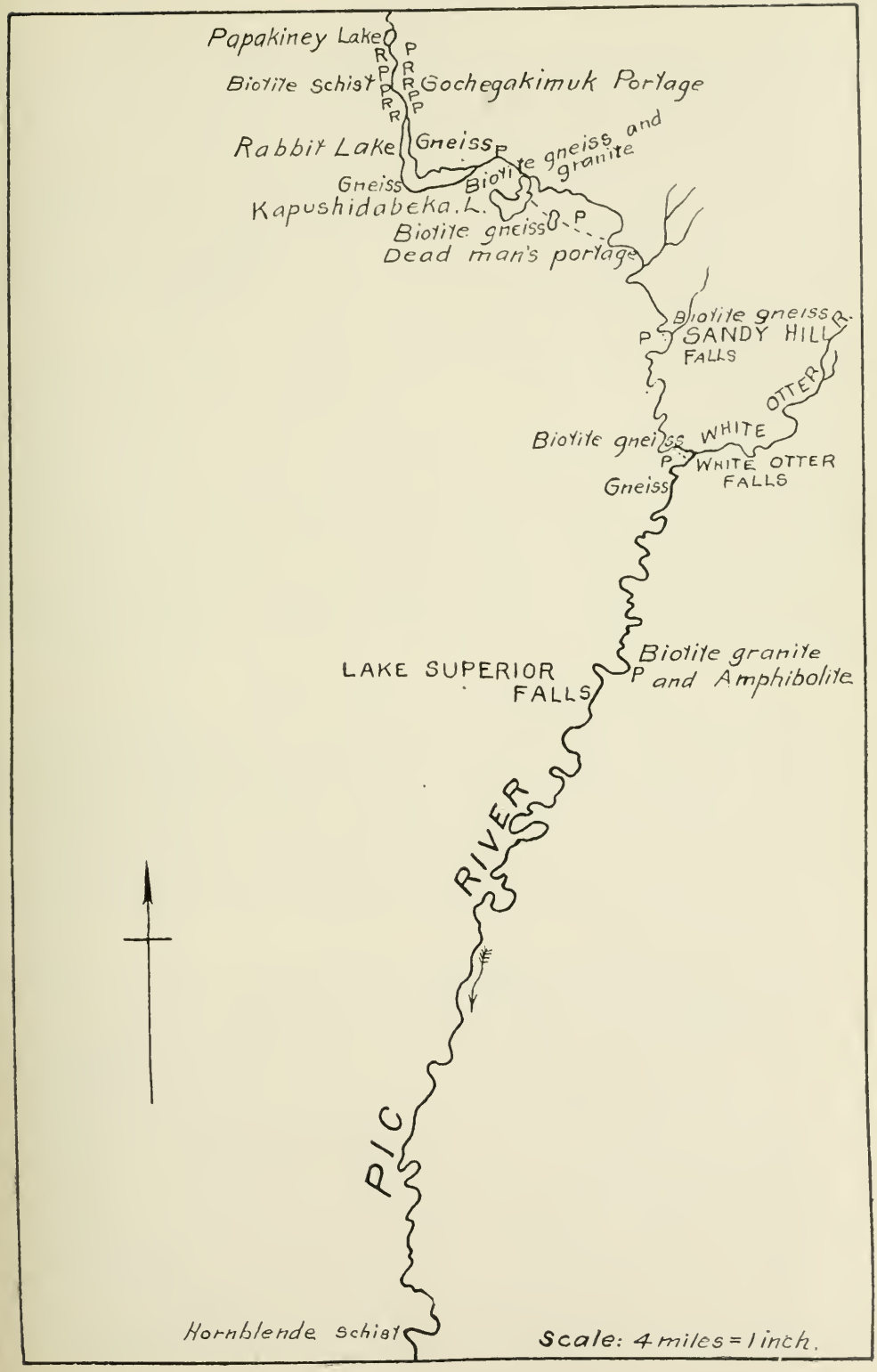

Papakiney Lake
Biotite schist
Gochegakimuk Portage
Rabbit Lake
Gneiss
Biotite gneiss and granite
Gneiss
Kapushidabeka L.
Biotite gneiss
Dead man's portage
Biotite gneiss
SANDY HILL FALLS
OTTER
Biotite gneiss
WHITE
WHITE OTTER FALLS
Gneiss
LAKE SUPERIOR FALLS
Biotite granite and Amphibolite
PIC RIVER
Hornblende schist
Scale: 4 miles = 1 inch.

Plate XII.

exposure of the same material, which in the hand specimen shows the dark bands to be made up principally of hornblende with some chlorite, while the lighter streaks are composed of quartz and orthoclase. The strike of this last exposure is east and west, the dip 53° S. Between the Making Ground river and Mud lake, at the head of the Pic river, is a portage one and a half miles long (pedometer measurement).

At the west end of Mud lake is an outcrop of compact hornblende schist striking east and west and dipping 68° N. In the hand specimen the minerals composing this schist cannot be determined, but under the microscope it is found to consist of minute particles of green hornblende with a very small amount of quartz and feldspar. This rock is probably Keewatin in age. On the outlet of Mud lake is a coarse granite composed of quartz, orthoclase and hornblende, with a few particles of magnetite. The rock varies from coarse granitic to pegmatitic in structure.

On Mackay's lake, about a mile south of the inlet, is a dark schist which in the hand specimen shows no minerals which can be identified, except a few pieces of quartz. Under the microscope it is seen to consist of quartz and orthoclase, the grains of which minerals are surrounded or nearly surrounded by small flakes of biotite. Two or three garnets are to be seen in this material, and as heretofore this rock has been classed as Huronian it may be looked upon, possibly, as a phase of the garnetiferous biotite gneisses found upon the line at about fifty miles north of White river. This, however, cannot be stated positively until work has been done on the extension of the outcrops. Cutting this schist is a dike of diabase of fine granitic texture, which in the hand specimen shows lathlike plagioclase and magnetite. Under the microscope it is found to consist of labradorite, augite, magnetite and some secondary calcite and chlorite. The texture is that of a typical diabase, consisting of an interlaced network of lath-like crystals of labradorite, while in the interstices are grouped the augite and magnetite.

Water Powers and Rock Formations on the Pic

Near the east end of Mackay's lake the rock consists of granite and biotite gneiss, probably of Laurentian age. A sample of gneiss taken about a mile and a half from the outlet, on the south shore of the lake, is composed of biotite, quartz and orthoclase. Near the first rapids below Mackay's lake is a schist not distinguishable from the last mentioned, which strikes N. 65° E., and dips 80° N. Four hours' run below the first rapids is an exposure of granite on the west bank of the river. On the weathered surface the feldspars are yellow, due to iron rust, and in fact the entire surface is apparently coated with a deposit of limonite. On the fresh fracture the rock is seen to be composed of quartz, biotite and white feldspar, which shows striations on the cleavage faces and is probably albite.

After another hour's run we came to the second rapids where there is a large exposure of pegmatite enclosing biotite schist. The fall of this rapid is not over ten feet, but it furnishes a good location for a dam as the storage above is large.

At the outlet of Sagiwatan lake is an exposure of biotite gneiss striking N. 50° E., and having a nearly vertical dip. The rock is exposed on both sides of the river, and between the exposures is a swift rapid known as Cat rapid. The rock varies in texture from coarse granitic to gneissic, and is composed of quartz, white feldspar and biotite. No striations were observed upon the cleavage faces of the feldspar, and it probably is orthoclase altering to kaolin.

At Gochegakimuk portage is a good water power. The rapid at this point has a fall of about fifteen feet. At this point there is a compact biotite schist composed of quartz, orthoclase, and a small amount of biotite.

At the upper end of Rabbit lake a coarse pegmatite outcrops just below Sagebouti portage, but about a quarter of a mile down the lake on the east side the rock becomes granitic in texture and is composed of quartz, orthoclase and biotite which are visible in the hand specimen. Under the microscope these same minerals appear and in addition microcline, and microperthite. The orthoclase is kaolinized to some extent.

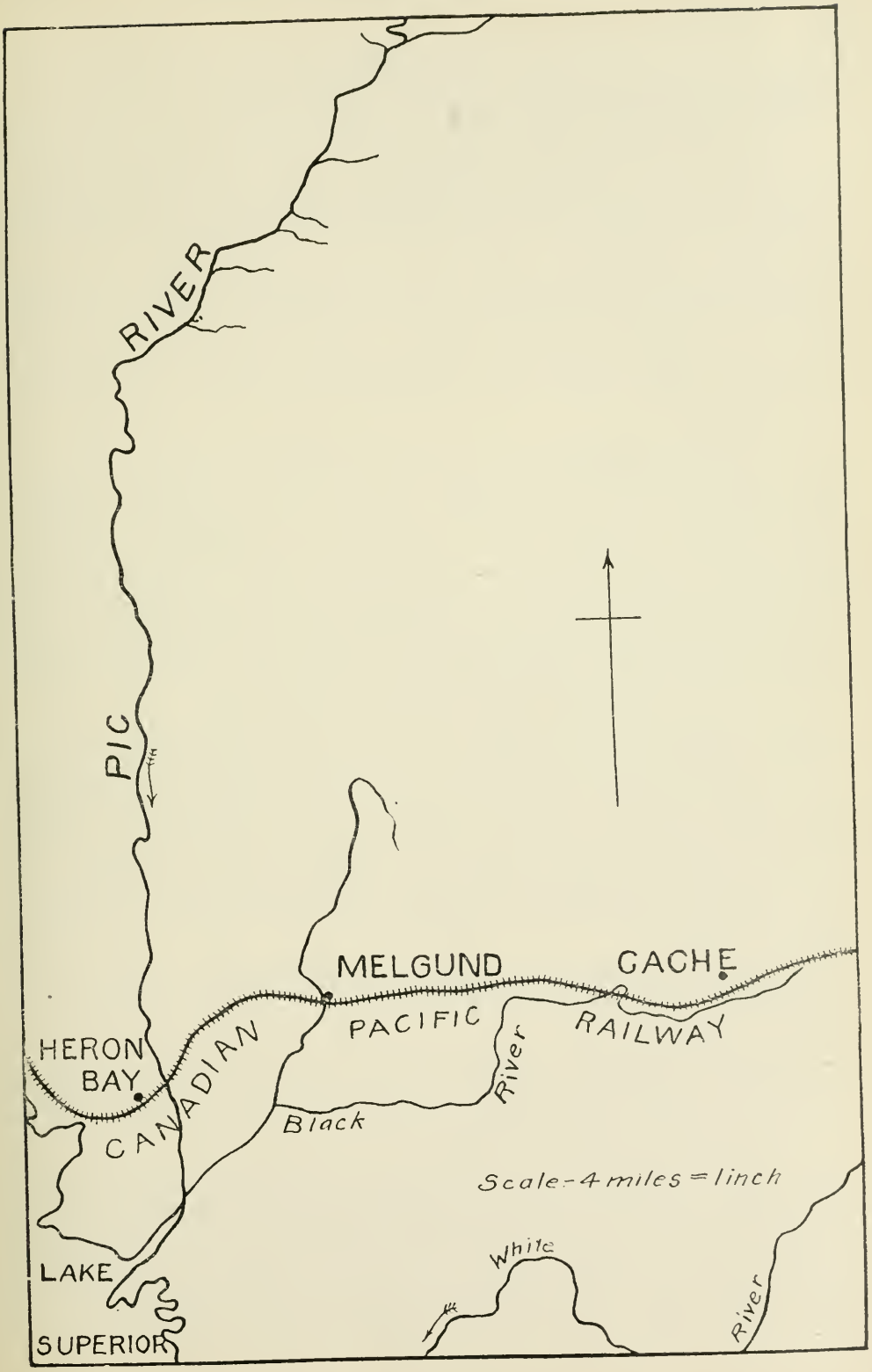

RIVER
PIC
MELGUND
CACHE
PACIFIC
RAILWAY
HERON
BAY
CANADIAN
Black
River
Scale-4 miles = 1 inch
White
River
LAKE
SUPERIOR

Plate XIII.

Below Rabbit lake is Split Rock rapid, which has a fall of about twelve feet and would furnish good water-power. At this point biotite gneiss and granite are found which strike nearly east and west and have an almost vertical dip.

Below this rapid one enters directly into Kapushidabeka lake, and from this lake the route leads across Dead Man's portage, which has a total length of about two miles, but is broken by a lake about a quarter of a mile long about a quarter of the way across. This portage is made to avoid a long and dangerous rapid. On the small lake on Dead Man's portage biotite gneiss is to be seen, but most of the portage is on clay loam.

At Sandy Hill falls the rock is a much contorted biotite gneiss showing quartz, feldspar and biotite in the hand specimen. Under the microscope this rock is found to consist of quartz, orthoclase, microcline, plagioclase with zonal extinction, and biotite. The orthoclase and microcline are altering to kaolin, but the plagioclase appears quite bright. Similar granite and gneiss were to be seen at White Otter fall. At this point good water-power can be developed, though there is not much storage above the fall.

At the top of Lake Superior falls the rock is hornblendic and consists of alternating bands of granite containing biotite, quartz and feldspar, and basic bands consisting apparently almost entirely of hornblende. The rock is much contorted, and has a general strike of N 50° E., and dip 75° N., though there is considerable variation, due to flow structure and folding. Under the microscope the light bands are found to consist of quartz, orthoclase, microcline, plagioclase and biotite. Kaolinization has not progressed very far in this rock. The plagioclase has an extinction angle of about 4 or 5 degrees and is probably albite. Under the microscope the dark bands are shown to consist almost entirely of hornblende with small amounts of orthoclase and albite. The rock is apparently amphibolite which may have its origin in the same materials as go to make up the Keewatin schists in this part of the country.

Seven and a half hours or about thirty-five miles below Lake Superior falls an outcrop of compact hornblende schist was found on the river bank. In the hand specimen it is dark green to black in color, and is so compact that none of the component minerals can be identified. Under the microscope, however, it is seen to be composed of hornblende with fine particles, which may be quartz, or more probably quartz and orthoclase, but which are too small to be identified even with the microscope. The thin section shows an excellent example of micro-folding, and the hornblende crystals are arranged parallel to the side of the folds in such a way as to cause all the crystals on the same side of the fold to extinguish at the same angle. This rock is undoubtedly Keewatin in age.

No other outcrops of rock were examined below this point, although the mountains in some cases showed rock near their summits, most of which were apparently of Laurentian age.

At several places along the river large deposits were noticed which consisted of alternating bands of clay and sand. This arrangement on being cut down by the river gives a rough sculptured effect, similar in character to that found in the Bad Lands of Montana, Wyoming and South Dakota.

In correlating the exposures found on the Pic river with those observed on the line, it is interesting to note that the garnetiferous biotite schist which is found on Mackay's lake and has been referred to the Huronian, would if produced to the line cut it at about the point where the garnetiferous biotite schist is found. That the rock found on the lake about thirty chains west of forty-three miles twenty-five chains may be Keewatin, obtains some support from the fact that the outcrop of a Keewatin schist which was found seven and a half hours or approximately thirty-five miles below Lake Superior falls is nearly west of the above mentioned outcrop.

Acknowledgments

In concluding, the writer wishes to express his appreciation to Mr. Brisbois, keeper of cache 10 and Mr. H. J. Farr, keeper of cache 10A of the Transcontinental Railway line, for hospitality extended to him. He also wishes to acknowledge his indebtedness to Mr. Peter Godchere, manager of the post of the Hudson's Bay Company on Long lake, for hospitality and assistance in mapping the portages on the Pic river. He desires to make acknowledgment to Professor A. P. Coleman and Professor W. A. Parks of the University of Toronto for valuable assistance in the determination of the geologic age of the rocks found. Finally, he desires to express his appreciation of the uniform kindness and courtesy of Mr. Alexander Niven, O.L.S., without whose advice and assistance it would have been almost impossible to carry out the work to its completion.

I.—IRON RANGES EAST OF LAKE NIPIGON

BY A P COLEMAN, assisted by E S MOORE

Introductory

During the past two summers work has been carried on by the writer and his assistants, in accordance with the instructions of Mr. T. W. Gibson, Deputy Minister of Mines, on the Iron ranges east of lake Nipigon, near Poplar Lodge and the Sturgeon river. In 1906 Messrs. Moore and T. L. Goldie acted as assistants; in 1907, Mr. Moore and Mr. W. F. Green: all three proving intelligent and faithful in their work, portions of which were carried on by Mr. Moore independently.

It has long been known that the Iron formation exists in the lands formerly mapped as Huronian east of lake Nipigon, and a number of geologists have made brief references to the region, but without making any serious geological study of the relationships of the Iron ranges. References to former work will be found in the section of this report dealing with the Nipigon or Keweeenawan formation.

Until the summer of 1906 the only detailed investigation, east of lake Nipigon, had been made by Mr. R. H. Flaherty and Prof. A. B. Willmott for economic purposes; and these gentlemen were good enough to provide blue prints or tracings of the result of their work, which proved of much assistance in planning our field operations.

Prospectors have scoured the region pretty thoroughly, and practically all of the Iron formation has been taken up as claims, which extend with few breaks from near Poplar Lodge on the shore of lake Nipigon to lake Wawang, twenty-one miles inland. The only gap in their work is caused by a band of diabase, which cuts across the range about seven miles from lake Nipigon.

The greater part of these claims have been surveyed later as locations of various sizes, from 40 to 320 acres; but a few towards the eastern end have not yet been surveyed. Many of the locations are not known to contain outcrops of the Iron range, but were taken up along the direction of known outcrops, with the idea that the formation probably continues beneath areas of drift or muskeg. The well cut out lines of the locations have been of great assistance in working out the geology, which has been fixed in most cases by pacing from corner posts, and making offsets on compass lines. In most of the region there is no disturbance of the compass, but along certain parts of the range, where magnetite occurs, the dial compass had to be used.

In last year's Report details were given of most of the rocks near Poplar Lodge and lake Wendigokan, and a sketch map was published, showing the distribution of the Iron formation.[1] This year some critical points were gone over again, and the mapping was carried as far east as the Iron range has been found. A geologically colored map has been prepared, showing the result of both years' work; and it is intended to take up the geology in a general way for the whole region in this Report, going more into detail in the parts not referred to last year.

Acknowledgments are due not only to Mr. Flaherty and Prof. Willmott for assistance in various ways, but also to Mr. P. A. Leitch of Nipigon and to the Geological Survey, all of whom aided us with maps and information.

Several of the prospectors who discovered the outcrops and took up claims at various points have served as guides, so that probably everything that shows much promise has been examined by us. Most of the topography, such as the forms and relations of lakes and rivers, we have had to revise from former sketch maps, or to survey afresh, so as to have a fairly complete foundation on which to plot the geology.

Physiography

The western third of the region mapped includes ranges of rocky hills on the north and south and a broad area between mainly covered with old lake deposits of silt or sand, or peat bogs, through which rise a few comparatively low hills of rock.

[1] Bur. Mines, Part I., 1906, Iron Ranges East of Lake Nipigon, A. P. Coleman and E. S. Moore.

The highest points do not reach more than 400 or 500 feet above lake Nipigon, which is 852 feet above the sea. There are a few small lakes and streams, but the only important body of water is the Sturgeon river, which is next the largest affluent of lake Nipigon.

East of the range of diabase hills which separates the Poplar Lodge ranges from those of lake Wendigokan the country changes a good deal, containing a multitude of lakes, more than sixty in the district mapped, of all sizes, from mere ponds to bodies of water four miles long and a mile and half broad, almost all tributary to the Sturgeon river. Rock crops out on many of the shores of the lakes, and sand plains occupy less space than west of the diabase hills. The map indicates the larger tracts of drift or muskeg by a separate color. It is, however, probable that patches of rock occur in the areas thus colored, since the field work was largely confined to the Iron formation and its surroundings.

All the physical features of the country, ranges of hills, lake basins, rivers and the iron range itself, are stretched out in a direction a little north of east and south of

Sturgeon river.

west, corresponding to the strike of the schistose structure of the rocks; due probably to parallel folds caused by lateral pressure from upwellings of granitoid gneiss on each side, beyond the limits mapped.

The two southern Iron ranges near Poplar Lodge can be reached by trails running inland from lake Nipigon, the northern one by the lower reaches of Sturgeon river. The ranges near Wendigokan and eastwards must be reached by canoe on Sturgeon river as far as the range of diabase hills, and beyond this by a chain of lakes affording easy canoe navigation for about fourteen miles.

Sturgeon River

Sturgeon river averages about one hundred yards in width near its mouth, with a gentle current for three and a half miles up to the first rapid, which has a fall of nine feet over greenstone. About two miles above this there is a fall in two stages, with a total drop of thirty-eight feet, over greenstone, followed by two and a half miles of swift water with two riffles, which can be run coming down. The river up to this is somewhat winding with steep banks of silt and sand except where rock crops

Falls on Sturgeon river.

Falls on Sturgeon river.

out at rapids, and its valley has a direction considerably north of east. Here its channel suddenly turns north and crosses a broad ridge of diabase as a succession of rapids and falls a mile long.

At the lower end of the rapids two portages start, one to the north more than a mile in length, the other to the east more than two miles long, both running much of the way over the hilly surface of the diabase. Going eastward it is best to avoid the heavy currents of the river above the long rapids, by portaging to lake Corrigan, which is narrow and about a mile long, and then taking a portage of about a mile and a quarter, interrupted by a pond, near the east end, to lake Wendigokan. After these long portages the rest of the Iron range may be easily reached by a chain of lakes with navigable creeks or short portages between.

The river above the long portage where it has a fall, estimated by aneroid at 78 feet, makes a long irregular curve to the northeastward, then suddenly bends south toward the east end of Paint lake. This part of the river has numerous short rapids, some of which can be run, and alternations of swift and slack water between. Most

Poplars, Sturgeon river.

of the rapids are over ridges of green schist, though some are over boulders with no bed rock visible. As this bend leads much to the north of the Iron range it has not been included in the map.

Near the end of Paint lake the river is sluggish and wide with marshy banks, though the lake itself is mostly rock rimmed. From the end of the lake the course of the Sturgeon river bends eastward again, and two or three miles to the east the canoe route from Wawang lake comes in.

Seven or eight miles beyond, the river expands into Sand lake, and four or five miles farther east opens out into Battle Island lake, the last point to the eastward reached during our field work, since no Iron formation or other locations have been reported beyond. Battle Island lake has an elevation of 1,044 feet, as determined by hand level or estimate at the short rapids and falls, and by aneroid on the longer portages. The highest fall between this lake and the long rapids is of twenty-one feet.

Sturgeon river has brown water, but otherwise is a most picturesque stream, with a great variety of scenery along its banks. If mining operations should be undertaken

on any part of the Iron ranges power could easily be developed at several of the falls, though the difference in level between high and low water is several feet.

The Sturgeon is still a large river where it passes through Battle Island lake, more than 45 miles from its mouth, and must drain a large area to the east and north, but there are no reliable maps of its head waters, and we had no reason to carry our survey beyond this point.

Lakes of the Region

West of the diabase hills, which form a natural boundary between the two parts of the region, the lakes are comparatively few and small, drained by Sand creek, which enters lake Nipigon at Poplar Lodge. East of the diabase band there is a perfect labyrinth of lakes, mostly draining through Clear creek into the Sturgeon above the long rapids. The canoe route begins with Corrigan lake, which has an outlet of its own, through an unnavigable creek into Sturgeon river; then crosses a low water shed to Wendigokan lake, three miles long from west to east, and with numerous bays and islands. Its shores are partly of sand, but include many outcrops of rock. Clear creek, which flows out northwest from its east end towards Sturgeon river, enters the lake only half a mile to the south. The water is crystal clear, so that all the fish can be seen as one follows the windings up to Bearskin lake on the east. There is a rise of about five feet between the two lakes, but no rapid. From the south side of Bearskin lake the creek with some marshy expansions and even more numerous curves can be followed to Pasha lake, which is about a mile long and about ten feet higher up. From its eastern end a tangle of small lakes and bays with three narrows leads to Bush lake, from which there is a short portage north into lake Ida, two miles long, and a canoe route eastwards through Fox lake into lake Wawang, about four miles long and a mile and a half wide, the largest of the whole chain of clearwater lakes.

There is a smaller chain of lakes running nearly parallel less than half a mile south, as may be seen from the map, but connected by smaller creeks, which are unnavigable for canoes. They drain through Still lake, Whitefish lake and Dead lake, which is shallow and with mud bottom, into the southern bay of lake Wendigokan.

Most of the shore along all these lakes is of low sand plains or marsh, but on almost all of them there are outcrops of rock, usually rising but little above the surface. The highest of these lakes is probably not more than twenty-five feet above the lowest, and the whole series occupy comparatively shallow basins, separated only by flat plains or muskegs.

The Iron formation is easily reached in almost all its parts from one or other of these lakes, and the boundary lines of the locations very often come out on their shores, so that they form the natural highway for anyone wishing to follow up the work that has been done.

Classification of the Rocks

The region mapped from Poplar Lodge eastward contains a considerable variety of rocks, all very ancient except the Pleistocene drift and old lake deposits, which will be taken up later. They are all pre-Cambrian, with the exception of certain diabases which may be of Keweenawan age or perhaps a little later. The classification used is that recommended by the Correlation Committee, and may be tabulated as follows:

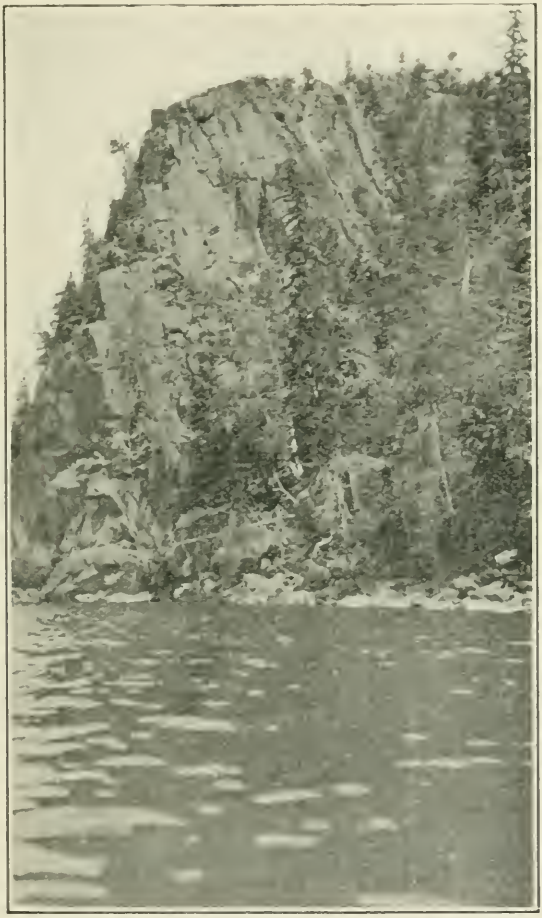
KEWEENAWAN		Basic eruptives, diabase, gabbro, etc.
ARCHEAN		Lower Huronian—Conglomerate, and probably slate and arkose.
	Keewatin	Iron Formation, with some slate schist and arkose.
		Green and gray schists, sometimes sideritic.
		Greenstones, green schists and volcanic.

The only undoubted Lower Huronian rocks are the conglomerates, but certain slates and arkoses associated with them are probably of the same age The Keewatin covers much the larger area and includes a variety of eruptives, both deep seated and

volcanics, as well as sedimentary rocks on a smaller scale, the Iron formation being the most important. All of the Keewatin rocks have undergone much alteration by compression at right angles to the strike and by metamorphism, and often the original minerals have been completely rearranged into secondary minerals.

Keweenawan Eruptives

The only solid rocks later than the Archean are the diabases, approaching gabbro in character, which form bands or bosses rising as ridges or hills in various parts of the region, their area being often small, though sometimes large. These rocks are dark gray, and range from fine-grained near the edge to quite coarse-grained at a distance



Keweenawan cliff, Humboldt bay, Lake Nipigon.

from their contact with other rocks. They show no arrangement in sheets and have no columnar jointing, points in which they differ from the diabases of the Keweenawan sills found at various points on the shore of lake Nipigon and the Nipigon river. As the rock in thin sections is an olivine diabase resembling that of the Keweenawan sheets, it may be supposed that these irregular masses or bands are the more deeply seated parts of the Keweenawan basic eruptives, perhaps representing the channels through which the molten rock ascended.

The largest area of diabase separates the Poplar Lodge iron ranges from those to the east, and has a width of two miles from east to west at its widest. Towards the

south it is lost under sand plains and muskeg, but it rises as steep hills with an uneven surface to the north as seen on portage trails. Where crossed by the Sturgeon river in the long rapids, it turns westward and perhaps extends to the shore of lake Nipigon, where diabase is found, but this part of the region has not been touched at many points in our work.

Another considerable area is found at the southwest corner of the map, where the Iron range is apparently cut off by it. Though partly covered by swamp, this area appears to have a length of three miles and a width of at least one mile. Numerous smaller patches and bands of diabase are represented on the map, many of which seem, however, to be more ancient, since they have undergone much more weathering than the usual Keweenawan diabase.

None of the Keweenawan sedimentary rocks have been observed in the region mapped, though they occur farther south and farther north along the shore of lake Nipigon. Except as interrupting the continuity of the Keewatin rocks which contain the various Iron ranges, the diabase just referred to have not much practical importance, and the areas covered by them have been studied only incidentally. There are very few diabase dikes so far as observed, compared with most parts of the Archean of northern Ontario, the molten rock having eaten or pushed its way up with quite irregular boundaries in most cases instead of filling long continued fissures.

The Lower Huronian

The Lower Huronian conglomerate is of much importance geologically as affording a well defined horizon for the subdivision of the Archean, since it represents the greatest break in time of which we have evidence in the lake Superior region. It has also some practical importance, since it affords the best guide in working out the synclines where ores may be concentrated along the Iron ranges.

Only small areas of conglomerate are found west of the diabase band, but east of it a broad belt extends along the north side of the region mapped for 15 miles or more. As it was not followed from point to point, but touched only at intervals of half a mile or a mile, our map represents this band as more discontinuous in all probability than it really is. In width it runs from a few feet to a third of a mile, but is generally 100 or 200 yards wide.

As seen from the map there are many smaller patches of conglomerate, frequently only a few feet wide, but generally elongated in the usual direction of the strike, and often near bands of the Iron formation and parallel to them. The conglomerate is generally quite schistose, with the softer pebbles rolled out to lenses, though harder ones, such as the granites, may keep their original shape. The schistose cleavage follows the general strike of the region, a little east of north, and always has high dips. The stratification, as shown occasionally by bands with many or few pebbles, seems to run in the same direction, but in most cases the bedding is not easily determined.

The rocks enclosed as pebbles or boulders include almost all the kinds found in the Keewatin with the addition of granite, derived from the neighboring regions. The list includes granite, aplite, diorite, felsite, porphyry, greenstones and green schists, white vein quartz, jasper and other varieties of the banded silica of the Iron formation. The stones range from the smallest pebbles up to boulders two feet in diameter, but very large ones were not often seen. They are generally well rounded, where not distorted by pressure, but some are subangular. They are often much crowded, but occasionally sparsely scattered. Near Corrigan lake, at some localities, the pebbles have been squeezed against one another till the harder ones dented and impressed the softer ones as if they were plastic.

In most places the conglomerate appears to be waterformed, and not the result of immediate glacial action, though the number of large granite boulders brought down from a distance of at least some miles is suggestive of ice transport, the materials being rearranged afterwards.

The matrix of the conglomerate is a somewhat re-crystallized arkose containing angular fragments of quartz and feldspar, and resembles the matrix of ancient boulder clays.

Certain slaty schists and arkoses closely associated with the conglomerate also probably belong to the Huronian, though no definite order of succession has been worked out.

The whole of the Lower Huronian rocks studied are sediments of one kind or another, no eruptives having been found; and these sediments could not have been laid down until profound erosion of the Keewatin rocks and the granites which penetrate them had taken place, to provide the vast quantities of pebbles, boulders and finer materials needed for beds of rock hundreds of feet or even more than a thousand feet thick and several miles in length. The break between the Lower Huronian and the Keewatin and Laurentian must therefore have been of very long duration, allowing the lower rocks to be thrust up by mountain building forces, and to be exposed for ages to the erosive work of frost and weather and waves before the conglomerate was formed of the fragments and laid down upon the originally eroded surface.

Rocks of the Keewatin

The Iron Formation

The Iron formation is the highest or almost the highest part of the Keewatin, and extends as long bands, with many gaps, from end to end of the region mapped. It provides almost as definite a horizon as the conglomerate just described, but the bands are in general found to be narrower. In some places three parallel bands a mile or two apart may be distinguished, but this is by no means the case everywhere.

The materials of the Iron formation in the Nipigon region are always silica in some form and an oxide of iron, magnetite or hematite, never siderite nor sulphides as in the Michipicoten region. There are two types of the formation, one consisting of interbanded quartzitic or cherty silica with magnetite, the other of jasper with hematite, but there are mixtures of the two varieties in many places.

The dark variety of the Iron range is often intermixed with a gray slate, and the leaner parts seem to grade into the latter rock, containing less and less magnetite until the compass is no longer affected.

The jaspery variety is a very showy rock with bands of bright red and glistening black hematite, intricately folded and crumpled, and cut by narrow veins of white quartz which have also been crumpled. The actual jasper and hematite may be in rather narrow elongated strips with gray schist between, so that a cross section may show many alternations of banded jasper and schist instead of continuous jaspery material as in most iron regions near lake Superior.

Intermediate varieties between the extremes described may contain magnetite enough to make the compass useless, along with some strips of dull jasper and so much hematite that the powder of the ore is red when pounded with the hammer.

There is one small tract of Iron formation on Black river, a few miles to the southwest of the main succession of ranges, which is of an entirely different character from the others. The silica is in the form of coarsely granular gray or rusty bands an inch or two wide with a small amount of magnetite or none at all, looking like sandstone rather than chert or jasper. This variety resembles rather closely some phases of the Michipicoten ranges near the Helen mine; while the first varieties described are more like the Iron formation of Michigan or Minnesota.

It is probable that all the varieties began in much the same form, but have been affected by mountain building stresses to varying degrees, the jasper-hematite being least modified, the cherty-magnetite more so, and the coarsely granular silica from Black river most of all.

Rocks associated with the Iron Formation

The Iron formation described above seldom occurs in broad bands without intermixture of other rocks, especially slate or phyllite and various schists. The slaty rock may be looked on as merely an extreme variety of lean Iron formation, in which the magnetite or hematite has reached the vanishing point. Some slates that have no effect on the compass and are comparatively light in color and in weight, yet show a reddening when pounded with the hammer, indicating a small amount of hematite.

None of the slaty rocks examined in the Nipigon region contain any appreciable amount of carbon, thus differing from the slate accompanying the formation at the Helen mine.

Two kinds of schists are commonly found interbanded with the Iron ranges or close to them, one gray and quite schistose, consisting when examined under the microscope,

Shore, Lake Nipigon.

of the materials of arkose, and angular fragments of feldspar and quartz, with mica or chlorite enough to give a schistose cleavage. The schistose arkose and the slate or phyllite, for these two rocks sometimes pass into one another, are ordinary sediments, not chemical sediments as some have supposed the silica and iron oxide of the Iron formation to be.

Another kind of schist associated with the iron-bearing rocks, which is green and very cleavable, may be called chlorite-carbonate schist, and is perhaps a greatly sheared and rearranged basic eruptive in origin.

Actual carbonate rocks are rare and do not seem to be closely connected with the iron ranges, occurring often a mile or more from any known outcrops. The carbonate has the composition of ankerite or impure dolomite, and contains iron enough to weather rusty. The fresh material is pale yellowish, and does not effervesce with cold acid. The carbonate rocks are more or less schistose, and seem to belong to the Lower Keewatin rather than the Iron formation.

Lower Keewatin Rocks

Nine-tenths of the region mapped, if drift and peat covered areas are excepted, consists of schists and eruptives of the Lower Keewatin, mostly formed from basic eruptive materials, though there are some schistose arkoses containing a good deal of

quartz, some pale green schists containing carbonates and quartz, and some rather acid plutonic rocks like diorite or grano-diorite. All the Lower Keewatin rocks contain chlorite or hornblende enough to give them a green color.

Except the arkose, which consists of materials probably assorted and distributed by water, the Lower Keewatin rocks are of eruptive origin, either deep seated or coming to the surface through volcanoes.

Volcanic Rocks

Where the greenstones and green schists are exposed on clean surfaces, as along the shores of lake Nipigon, they generally show the character of volcanic materials, including amygdaloids, pillow structure and breccias of volcanic fragments. Probably, too, some of the more schistose rocks are rearranged volcanic ash.

The points and islands at Poplar Lodge, and the large promontory north of the mouth of the Sturgeon river consist almost entirely of greenstones showing these structures, though often rather obscurely, as might be expected in rocks so ancient. The

Breccia, near mouth of Red Paint river.

amygdules, holes formed by steam bubbles afterwards filled with secondary minerals such as quartz and epidote, are usually small and found only at certain levels, the upper parts of lava flows. The pillow structure, representing the crust of lava streams broken and rolled along by the still fluid lava below, is very well seen on clean weathered surfaces on some of the islands, but freshly broken surfaces scarcely show the structure at all. The volcanic breccia north of the mouth of Sturgeon river is best displayed on ice-smoothed surfaces wet by the waves. The bits forming the breccia are angular, not at all water rounded, and consist almost entirely of felsites and fine grained porphyrites, all green, but of varying tints. None of the fragments are more than a foot or two in diameter, and no granite nor jasper pebbles occur among them, so that they are very different from the Huronian conglomerate found not far away. The matrix of the breccia consists of smaller angular fragments of the same kind.

At several places inland, viz., along the north shore of lake Eva, the amygdaloidal and other volcanic structures are seen, and it is probable that volcanic rocks are really very widely spread; but on moss and lichen covered surfaces these features can hardly be recognized, so that it has not been possible to map these rocks separately from the other greenstones.

Probably many of the widespread green schists are also volcanic in origin, having been formed in the first place by showers of basic volcanic ashes.

Deep Seated Eruptives

In many places, especially along the north shore of Sturgeon river near its mouth, there are bosses and irregular eruptions of various kinds, from gabbro to grano-diorite, closely intermixed with the other members of the Keewatin, no doubt later in age than the rocks they penetrate but probably earlier than the Lower Huronian, since the conglomerate of the latter age contains boulders or pebbles of what appear to be the same rocks.

The gabbro-like rocks are greatly weathered, and the more acid plutonic rocks (such as diorite and grano-diorite) have also undergone a good deal of change, though their constituent minerals can still be distinguished. Undoubted granite has been found in the district mapped only once or twice, as dikes, though Laurentian granite and gneiss occur some miles away, both to the north and the south.

These ancient eruptives seldom cut the Iron ranges, perhaps because they are older; but one small band of weathered gabbro has broken through the Iron formation in A L 414, and has caused concentration of iron on a small scale, in the form of pockets of hematite, richer than usual. This elongated mass of gabbro may, however, belong to the Keweenawan eruptives, rather than those of the Keewatin.

Except that the plutonic eruptives, such as diorite and gabbro, are younger than the surface lavas which they penetrate, no definite order of succession has been worked out for the complex of greenstones and green schists of the Lower Keewatin.

Distribution and Associations of the Iron Formation

The Poplar Lodge Ranges

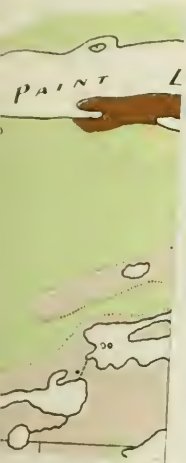
The earliest found of the Iron range outcrops were naturally along the shore of lake Nipigon where first a northern and a southern, and later a central range were located. As details of the geology of these locations have been given in the last Report of the Bureau of Mines,[2] it will only be necessary here to give a general account of the three ranges and the rocks which enclose them.

The Northern range has a length of about a mile and a quarter, running northeastwards through locations A L 408, 407, 406, 405, 404, 403, 402, near the north bank of Sturgeon river two or three miles from its mouth. It is seldom more than fifty feet wide, but reaches a width of 240 feet, with intermixed slaty rock at one spot on A L 403. In general the banded silica lies just to the southeast of a ridge of greenstone, under which it dips at an angle of 35 to 60 degrees. On the opposite side the Iron formation generally runs under old lake deposits towards the river bank.

Both magnetite and hematite occur, though the latter shows red only when powdered. The silica bands are generally cherty or quartzitic, with occasional strips of dull jasper. On the whole the range is too narrow and lean from the admixture of silica and slate to be very promising.

The Central range is three miles south of the northern, and is first seen a mile and a half inland from Poplar Lodge. This part of the region is mostly covered with sand plains and swamp, so that solid rock does not crop out very frequently and then only as low rounded surfaces, making it difficult to prospect without doing much stripping. A considerable amount of work has been done in this way, and three diamond drill holes have been sunk on the most important outcrop, but undoubtedly much of the range still remains covered. The known outcrops are in four localities, (1) A L 414, (2) at the north end of A L 413 and 412, (3) at the southern edge of A L 413 and in A L 416 and H F 1 and (4) in H F 5. The third area is the most attractive and has been most thoroughly prospected, showing a widespread series of bands of Iron forma-

[2] Vol. XVI, pp. 115-128.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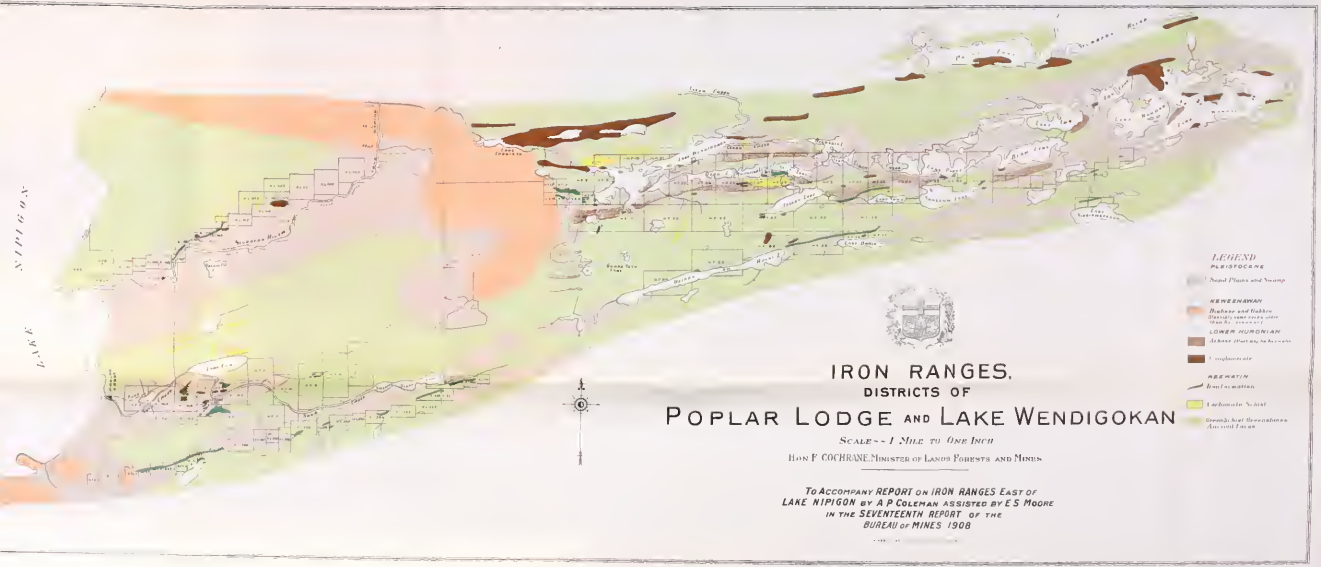


IRON RANGES,
DISTRICTS OF
POPLAR LODGE AND LAKE WENDIGOKAN

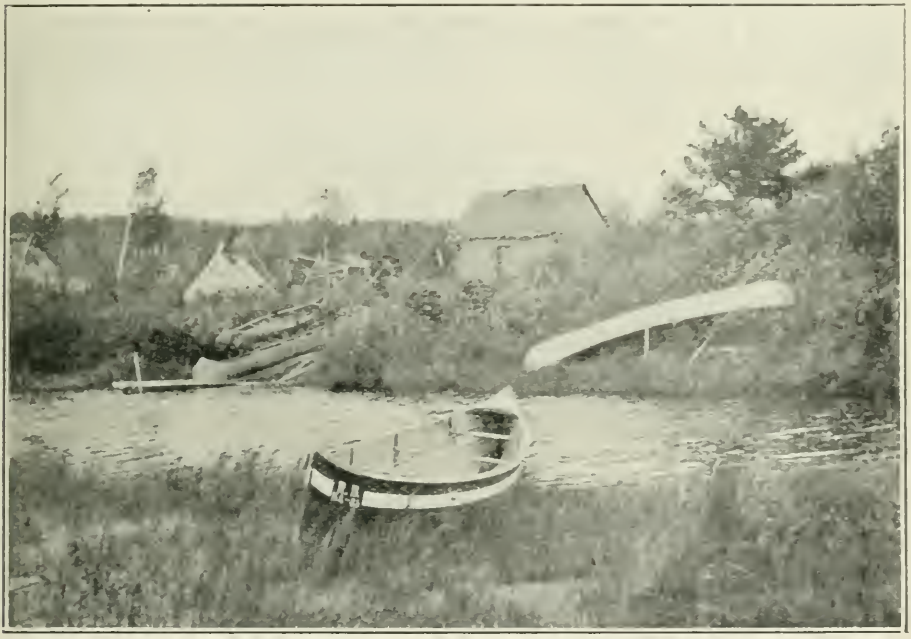
SCALE - - 1 MILE TO ONE INCH

HON F. COCHRANE MINISTER OF LANDS FORESTS AND MINES

TO ACCOMPANY REPORT ON IRON RANGES EAST OF LAKE NIPIGON BY A P COLEMAN ASSISTED BY E S MOORE IN THE SEVENTEENTH REPORT OF THE BUREAU OF MINES 1908

tion over a length from east to west of half a mile and a breadth of a quarter of a mile. Including all four outcrops the range has a length of nearly three miles, with a breadth of about three-fourths of a mile where widest, but these limits include much drift-covered surface and barren rock, and the most easterly outcrop is separated from the others by a mile and a half in which no Iron formation has been found.

The ore is entirely hematite, and the associated silica is jasper, often bright red. In the areas mapped as Iron range more than one half consists of grey and green schist in which fragments and long strips of the Iron formation are imbedded, and in general the jaspery strips tend to run out into schist toward the east and west. A narrow belt of Huronian conglomerate runs parallel to several of the outcrops, and is occasionally repeated several times as in location A L 414. This seems to indicate a number of small parallel folds as the structure, so that the great width of this range is probably due to repetition. In one place on the boundary between A L 413 and 416 a diamond drill hole showed jasper and ore 414 feet below the surface, so that the synclines are not shallow.



Indian encampment, Poplar Lodge.

The Southern range has a length of seven miles, including interruptions of drift and barren rock, and a width at greatest of 500 feet, though generally not more than a tenth as wide. It is separated from the nearest point of the Central range by three-quarters of a mile of greenstone and schist rising as a ridge. The Southern range contains much magnetite and resembles the Northern range, though much more extensive, and also richer in iron. The associated rocks are slate, and gray and green schists, and the range fades out laterally into the other rocks. The arrangement is unsymmetrical, the richest and most magnetic ore generally occurring on the north side of the range, while leaner bands are interbedded with slate or schist to the south. The general direction of the range is north of east, following the usual strike of the region, and the dip, like that of the Central range, is high, from 60 degrees to vertical.

The contrast between the narrow Northern and Southern ranges with their dark colors and magnetitic character and the broad Central range with its bright red jasper and shiny hematite is very great, and is perhaps to be accounted for by supposing that the outer ranges were most severely squeezed and metamorphosed when the folds and schistosity of the region were developed, the Central range being more protected and therefore less changed.

The Wendigokan Ranges

For some miles eastward of the diabase hills which separate the ranges just described from those inland it is no longer possible to distinguish three ranges. Near lake Wendigokan which has been mapped and described by Mr. Moore[3] there appears to be a continuation of the Northern range but not of the others. Details in regard to distribution may be found in his report, so that here it will be necessary only to give the general character and relationships. The most important outcrops are west of the lake, in locations H F 13, 12, and 10, and southeast of it near Still lake in location B T O 1. In the western area the Iron formation is wide and consists of banded jasper and gray slate, but there is much schist in portions of the range, which runs out towards the east and west into schist, the length exposed being about half a mile.

The area near Still lake is a little shorter, but has a width of 450 feet in the middle, part of it, however, being hidden by drift. The Iron range is very silicious here as in the other area, the last assays of samples running from 35.75 to 36.86 per cent. of iron; and there is no indication of any secondary accumulations of ore.

Farther to the east there are two narrow parallel bands of the Iron formation, neither continuing the strike of those just described. The longest runs from the northeast end of Watson lake for nearly two miles, beginning in location H F 32, and ending in H F 40, with a greatest width of about 100 feet. The iron-bearing rock consists of magnetite and jasper with green slaty schist on each side. The richest specimen of magnetite collected from it runs 48.9 per cent. of iron.

The general character of these outcrops of the Iron formation is like those of the Northern and Southern ranges near Poplar Lodge, always containing more or less magnetite, yet with some hematite and jasper. There seems to be no equivalent of the Central range in which no magnetite occurs.

Geology near Corrigan Lake

As Mr. Moore's work in 1906 included only the Iron formation and the locations enclosing it in the Wendigokan region, it seemed advisable to extend the study of its geology so as to connect up with the Poplar Lodge region to the west, and to add a tract to the north. Excursions west and south of Corrigan lake disclosed broad sand plains and muskegs with comparatively few outcrops of rock, all diabase for two miles to the south, then greenstone and green schist of the Keewatin.

To the north of Corrigan lake a broad band of Lower Huronian conglomerate rises as steep ridges with a width of nearly a quarter of a mile in all, including some narrow valleys floored with muskeg. The conglomerate is sometimes much squeezed, but often has its pebbles fairly well preserved. They consist of granite, quartz porphyry, greenstone, etc., the harder ones well rounded, the softer ones rolled out and bent round the others. The schistose structure strikes in the direction 70 degrees and stands about vertical, following the usual arrangement of the region. To the north, as far as explored, the rock is greenstone, and it is probable that the band of conglomerate is of synclinal shape, so that its true thickness is only 600 or 700 feet. A few dikes of porphyrite cut the conglomerate, perhaps offshoots from the diabase ridge to the west, which has a porphyritic development near Corrigan lake.

[3] Bur. Min Vol. XVI, pp. 139-145.

The Keewatin greenstone observed to the north and south generally has pillow structure, indicating lava flows, but at one point southeast of the east end of Corrigan lake diorite occurs, evidently of deep seated origin. South of location H F 16 interbedded with the usual green schist or greenstone there are bands of carbonate schist, but no Iron formation was observed.

Geology North of Wendigokan and Bearskin Lakes

North of the west end of lake Wendigokan green schist and carbonate schist are encountered for half a mile, with a dike of coarse white granite on the line between H F 18 and 19. A small lake is then reached on whose north shore the continuation of the conglomerate referred to north of lake Corrigan is found, having the same characters as before, but a width of only 480 feet. To the east the band of conglomerate

Huronian conglomerate, lake Corrigan.

seems to run out, after an outcrop of three and a half miles, since only sand plains and green schist were observed from this to where Clear lake flows out of Wendigokan lake.

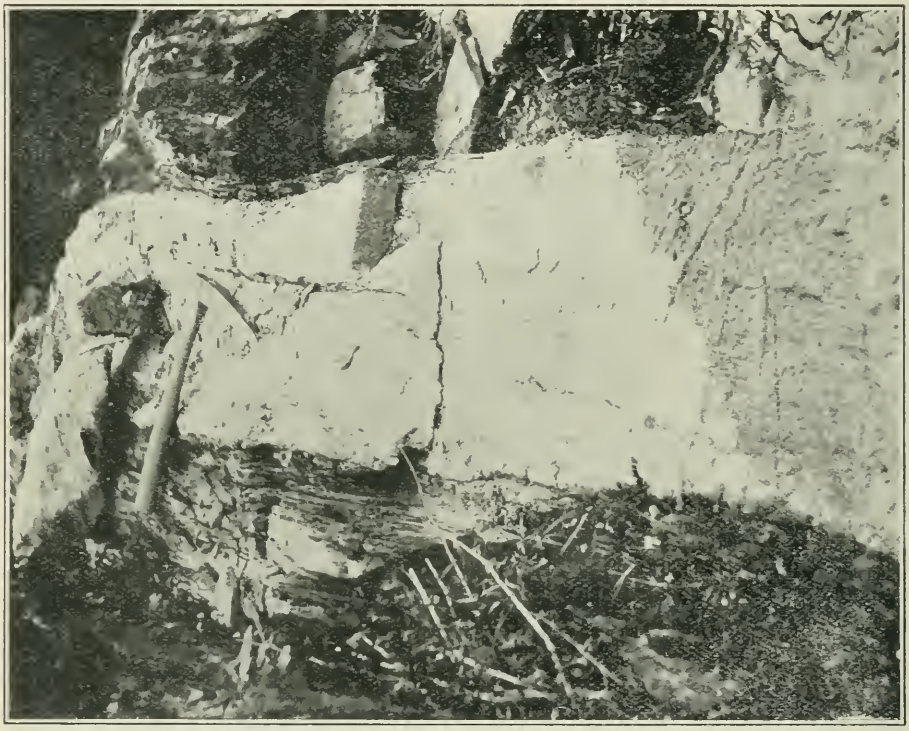
Beyond Clear lake, where it bends westwards near its outlet, the conglomerate appears again and runs eastward for about a mile. As mapped by Mr. Moore the previous summer, there is a narrow parallel band on the east shore of Wendigokan, which seems a continuation of a similar band at the west end of the lake. These are so much narrower than the northern band as to make it doubtful whether they are the same repeated by folding, or another conglomerate belonging to a different horizon.

Pasha Lake Region

As Mr. Moore's mapping ended with locations H F 38 and 40, where two narrow bands of Iron formation run out, the region to the east was taken up in detail, so that the Iron range and its associations could be satisfactorily mapped in continuation of the former year's work.

On the north shore of Pasha lake and on Clear creek and its expansions to the west, only sand plains and swamp are found for a width of more than half a mile. Beyond the drift Keewatin greenstone occurs, sometimes with a hint of pillow structure, but usually without.

South of the west end of Pasha lake arkose occurs, coarse and whitish gray, having a strike of 80 degrees and nearly vertical dip. This extends to Shallow lake, which runs parallel to Pasha lake a quarter of a mile to the south.



Dike of porphyry, Paint lake, Sturgeon river,

Near the middle of the south shore of Pasha lake a patch of conglomerate crowded with small pebbles rises from drift, and can be followed about 150 yards to the east, when arkose succeeds it and then gray schist. A small patch of bright red banded jasper lies below the water just west of a small point, but could not be traced on land, though the schists observed are of the kind often associated with the Iron formation.

Another small patch of jasper material was found a little north of Shallow lake and west of the line between H F 45 and 46, but this too could be traced only a few feet. The rocks between Pasha and Shallow lakes are chiefly gray slaty schist, with some rusty carbonate schist, varieties often associated with the Iron ranges, but no outcrops were found except the two mentioned.

South of Shallow lake hard greenstone with bands of green and gray schist are found for about half a mile, but to the east and west of the lake swamps hide the bed rock.

On location H F 46 Iron formation was found in two small patches toward the southern side, with gray schist and some carbonate schist. Most of the north half and part of the south half are drift covered or swampy.

Bush Lake, Lake Ida and Paint Lake

Location H F 46 is the last which has been surveyed, but a row of eleven claims of forty acres each extends to the east along the strike of the Iron formation. The first six of these claims consist very largely of sand plain and swamp, but a stretch of schistose arkose runs along the north side, and there are outcrops of slate like that found with the Iron range, and also greenstone and gray schist along the south side, but no actual jasper or ore was found in them. Bush lake has low swamps or drift-covered shores with a few outcrops of rock, all that was found being a little conglomerate at the end of the southwest bay, and Keewatin schists at the northeast end.

Lake Ida, reached by a short portage to the north, is also largely enclosed in sand

Shore, Wawang lake.

plains which rise about twenty feet above it. A little inland from its narrow western end greenstone, gray schist and arkose rise above the sand plain, and at the east end there is greenstone and arkose.

North of lake Ida greenstone, green and gray schist and porphyrite runs almost to the shore of Paint lake, where not drift-covered. Here and there broad outcrops of conglomerate show on the south shore of Paint lake, running parallel to its length and rising as steep ridges, often with a bay behind them to the south. The outcrops are probably remnants of a once continuous band. The pebbles include many bits of red jasper and of granite, which still have their original shape, but most of the others are flattened to lenses. The schistose structure has a strike of 60 degrees and a steep dip to the northwest.

Near Wawang Lake

Going eastward from lake Ida one passes first through Fox lake, which is surrounded with sand plains except for outcrops of conglomerate at each end, and then into the eastern bay of lake Wawang, the largest body of water in the region mapped. Most of its shores consist of swamp or sand, though considerable areas of conglomerate, of green schist and of arkose occur at various points, which need not be described in

detail. No outcrop of the Iron formation was found on the lake itself, but several occur in the row of small claims to the southwest.

The first claim, beginning at the west end of the southern bay of lake Wawang, is mostly covered with drift, but near its southwest corner greenstone and slate appear, with a band of lean Iron formation enclosed in the slate, and a hill consisting first of slate and then coarse diabase rises to the southwest.

The next claim to the southwest shows similar rocks, greenstone, green schist and slate, and the same is true of the third claim from lake Wawang, except that more of the Iron formation is found, near the southwest corner a few hundred yards east of Downey lake. Here there are two bands of hematitic slate, bright red in color, interbanded with greenish slates. A small stripping shows ten feet in width of the lean hematite in one place, with a strike of 70 degrees and vertical dip.

Nissiamkeekam Lake

A quarter of a mile south of the claims just mentioned, three or four other claims have been taken up along the north shore of Nissiamkeekam lake, including the best outcrops of the Iron formation seen east of Wendigokan. The country between includes greenstone, green schist and slate, and a little south of the north boundary of the claims the Iron formation is found by the side of a small ravine. It consists of jasper, "blue" hematite, and enough magnetite to make the compass useless, covering, with some slate, a width of about 60 feet. Specimens of the ore are the heaviest and purest collected during the work, but the solid ore is found only in narrow bands at most two or three inches thick. The range was traced by stripping the moss for more than 400 paces, with a direction of about east and west. The outcrop resembles the best parts of the Southern iron range near Poplar Lodge, but contains more hematite and less magnetite.

The rocks to the south and along the shore of the lake are largely gray slaty schist of the sort which often goes with the Iron formation, and have a strike of about 100 degrees with a vertical dip. The outcrop of iron ore runs somewhat across the strike, which probably represents merely the schistose structure, and not the original stratification.

Besides the two claims in which the Iron formation is well developed, another one has been cut out to the west and a fourth begun still farther west, probably taken up to include an extension, which was not found, however, in our field work.

As no outcrops of Iron formation had been reported east of lake Wawang for a number of miles, the survey was closed at this point and only resumed near Black river where a few iron claims have been taken up. Iron range was suggested on one of our maps to the west of Sand lake, an expansion of Sturgeon river, but we were not able to find claim lines or outcrops.

Black River Iron Claims

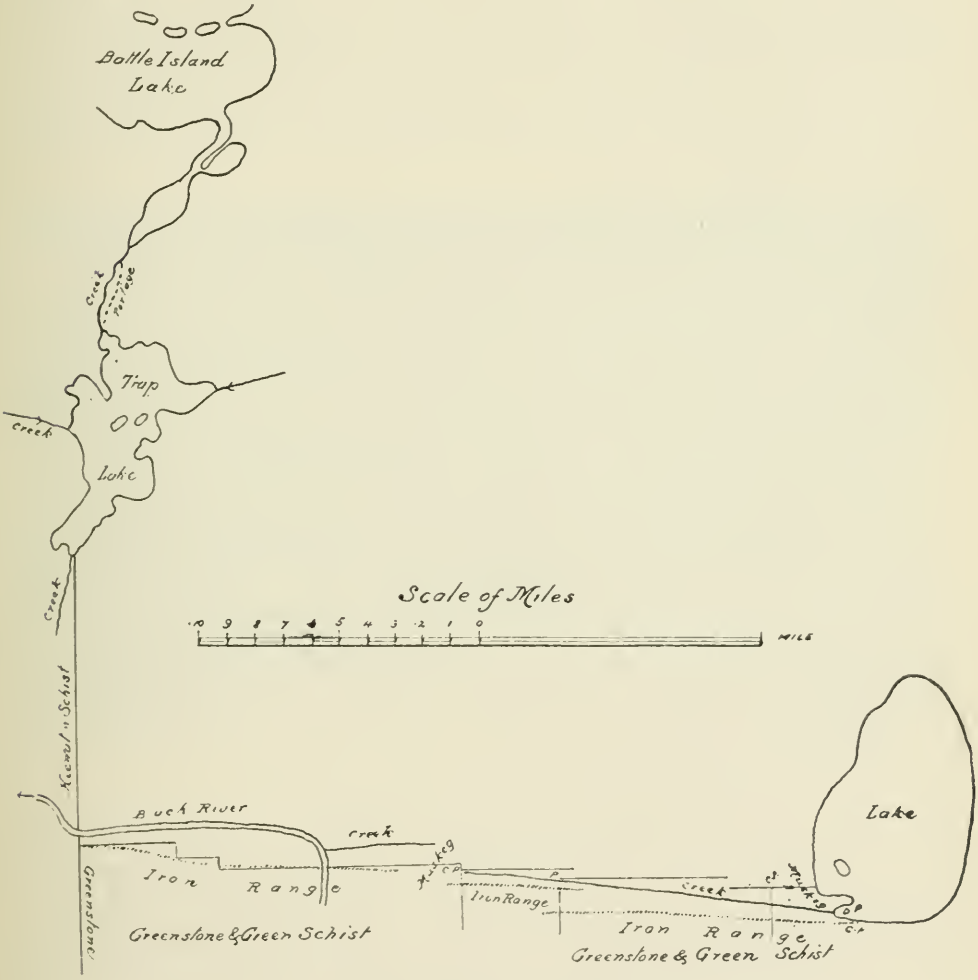
Leaving Wawang lake from near the middle of its northern bay a canoe route leads northwards through two ponds to Sturgeon river, which may be followed up stream east and southeast to Sand lake, then southeast to Battle Island lake, another expansion of the river. From its southern bay a portage leads south to Trap lake, from which Black river may be reached by a walk of about a mile and a quarter. On the way from Wawang to Sturgeon river green schist and conglomerate are encountered. Up the river mainly drift shows on the shores, but green schist was crossed on the portages, with a strike of 45 degrees, and vertical dip where these were observed.

Sand lake is enclosed partly by sand plains, as the name suggests, and partly by swamps, only one outcrop of rock being seen, conglomerate forming a small island.

Two and a half miles above Sand lake the portage past a rapid is over green schist, but beyond this no rock was seen on the river, the west end of Battle Island lake or on Trap lake, which probably got its name from its outlet being troublesome to find, since its shore are morainic, and no trap rock occurs. For nearly half a mile south of

Trap lake the country consists of morainic forms or sand plains. Then ridges of gray schist occur, striking nearly east and west, and having much the appearance of the Couchiching near Rainy Lake. Thin seams of harder materials, especially quartz, rib the surface.

Farther south some massive greenstone mingles with the schist which is now greenish, and has a strike of 80 degrees, and green schist of varying texture continues to Black river, here flowing westward near its head, as a creek easily bridged by fallen logs.



Iron Range on Black river.

Just south of the river ridges rises, partly consisting of coarse-grained rusty silica, a form of the Iron range not found elsewhere in the eastern Nipigon region, but very like some varieties near the Helen mine, Michipicoten. Banded sugary silica with a little magnetite, running east and west and with a dip of 80 degrees to the north, occurs in a width of five or six feet at this point, followed by dioritic looking greenstone and green schist, for 120 paces, when a belt of similar banded silica is met, having a width of 60 paces, beyond which green schist and hornblende porphyrite or diorite rise in hills to the south.

The bands of silica seem to be interrupted frequently, but were followed eastwards for more than two miles, narrowing and apparently running out near a small lake at that distance from a compass line due south from Trap lake. Though this strip of Iron formation is very like some of those in Michipicoten in the granular appearance of its silica, it seems too poor in ore to be of much promise. Bands of impure magnetite an inch thick were found in a few places, but much of the silica is almost devoid of ore. Occasionally dark green hornblende occurs in bands, the crystals often having a radiating arrangement.

The associated rocks are greenstones, green schists and amphibolites, and it may be that some of these eruptives are later than the Iron formation and have had a metamorphic effect, producing the coarsely granular quartz, so unlike the cherty or jaspery character of the silica in the other ranges near the east coast of lake Nipigon.

A thin section of the Iron range rock consists mainly of interlocking anhedra of clear quartz, often with films of brown iron oxide between them. Long, slender prisms of sillimanite grouped in bundles pierce the quartz individuals here and there, and a few crystals of magnetite occur also.

Very similar Iron formation is found near Fort Frances on Rainy river, where the rock was called Couchiching, and was looked on in earlier days as a sedimentary sandstone.

Near Half Way Point

It is probable that many small outcrops of the Iron formation are scattered over the region east of lake Nipigon buried under peat bogs or sand plains and thus far undiscovered by prospectors. An outcrop was observed on the shore a mile below Halfway point or Grant's point, as it is named on some maps, of a rather interesting kind petrographically, though of no economic importance, since it is less than 100 feet long and 20 feet wide. It is enclosed in greenstone and has been more or less torn asunder and the blocks shifted.

A thin section shows granular quartz like the last, though finer grained, through which are bands or flecks of a carbonate and a few scales of green chlorite. Some isometric crystals of iron ore, once magnetite, seem now to be hematite (martite), reddish black in color, occasionally with red streaks or bands running out from them into the quartz. Behind some of the larger crystals the quartz individuals and the slender strips of hematite are elongated and stream out as if in the lee of an obstruction in a current. Evidently magnetite has been further oxidized to produce hematite in this case.

A small amount of pyrite occurs also as crystals, giving a brown surface to the rock where weathered.

Relation of Laurentian to Keewatin

In the district mapped, Laurentian rocks do not crop out, but they occur not many miles to the south and to the north, and their pushing up from beneath is thought to have caused at least to some extent the folding and schistose cleavage, running about 70 degrees or 80 degrees, so characteristic of the iron ranges and their associated rocks.

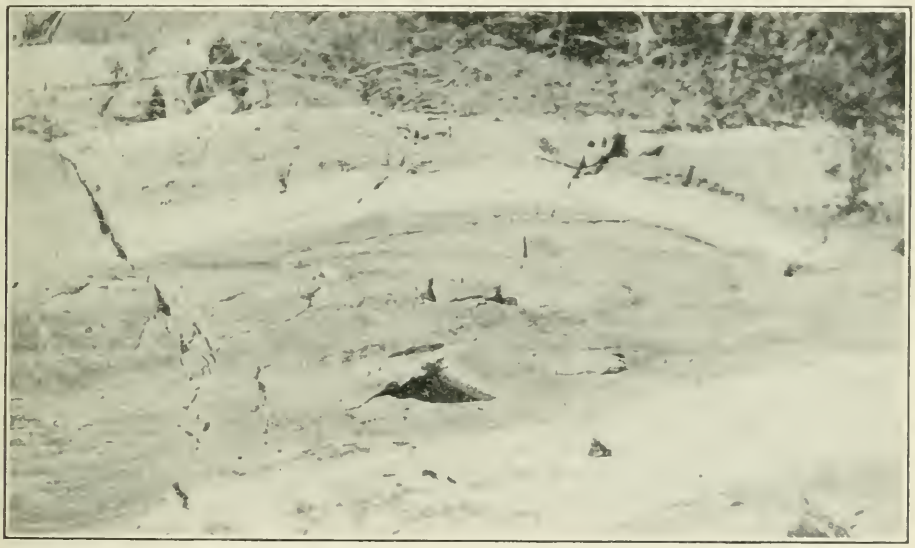
The northern Laurentian area was studied at some points where exposed on the shore of lake Nipigon, and its relations to the Keewatin will be described.

Going north from the mouth of the Sturgeon river a volcanic breccia of Keewatin age forms the first promontory, and the same rock reaches half way into the next bay. Then come green schist and greenstone, with some pillow structure, having a strike of 60 degrees. Mungo Park point, like most of the other promontories on the east shore, is a sheet of diabase, hiding the older rocks; but in the bay just north of it Keewatin greenstones appear at the southeast corner and continue for a couple of miles to the mouth of a small river, where red granite begins.

The Keewatin rocks here include hornblende, porphyrite, ordinary green schist, and obscure amygdaloids, through which the coarse red granite has pushed up, carrying

off blocks and sending dikes of various kinds and sizes into it. The boundary between Laurentian and Keewatin is very sharp in most cases, and is emphasized by the difference in color, pink or flesh red in contrast with dark green. The batholith of granite has had little effect on the sharp edged blocks of greenstone near their source, but some smaller bits, probably carried farther and digested for a longer time, show blurred outlines and have been partly absorbed.

There is an interesting assemblage of eruptive rocks near the mouth of the small river, where not alone the coarse granite and dark greenstone, but dikes of at least two kinds of granite, finer in grain and paler in color than the batholithic mass, penetrate the greenstone; a wide dike of diabase, probably Keweenawan, cuts the granite, and tiny dikes of felsite appear in the diabase itself. There are then eruptives of at least four ages, from Keewatin to post-Keweenawan within a space of 100 feet on the clean ice-smoothed and wave-washed shore. The contact of granite and the older rocks is clearly eruptive, with no blurring of boundaries or dragging out into gneissoid forms at the southern edge of the Laurentian batholith just described. Going north



Keewatin and granite, mouth of Red Paint river.

along the shore, however, the patches of greenstone in the granite appear to be more rolled out and elongated, the granite becomes gray, as if greenstone had been absorbed, and an indistinct gneissoid structure is noted.

The long peninsula of Livingstone point now intervenes, with a sheet of diabase hiding the older rocks for a mile and a half from its end. Rounding the point some Keewatin greenstone and breccia shows beneath the diabase for a short distance, but is covered again. Entering the bay Keewatin schist of a green black color appears on the islands, interleaved with thin seams of granite, and this intermixture continues as far as points near the mouth of Red Paint river, where the relationships were somewhat closely studied.

On certain islands near the river mouth the Keewatin consists of amphibolite porphyrite or greenstone and green schist, in every stage of intermixture with granitoid gneiss, which no longer has the appearance of eruptive granite; and no more instructive display of the mode of production of Laurentian gneiss or a "basal complex" could be desired. Unchanged masses of amphibolite an acre or two in area may be found on some of the islands, penetrated by small lighter colored dikes of more than one age. Near by the greenstone is brecciated, the sharp-edged blocks cemented by

thin sheets of granite. At other places both the greenstone and the granite dikes have been drawn out into long bands with a schistose structure having lighter and darker layers. Finally one finds them passing into rather coarse gneiss, banded with lighter and darker shades, but with no distinguishable greenstone or green schist left. This grayish gneiss is itself cut by dikes of red granite or of pegmatite, later effusions of the general magma.

At several points on the small islands *lit par lit* injection is beautifully illustrated, bands of green schist and granite alternating of every dimension down to a millimetre (one twenty-fifth of an inch) or less. On some surfaces the banding shows two shades of green along with the pink of the granite. Thin sections prove that the darker green bands are diorite schist, consisting of plagioclase and hornblende, the paler green bands

Sand spit, Lake Nipigon.

quartz-epidote rock, while the granitic bands consist of quartz, plagioclase, microcline and hornblende. All the minerals tend to be crushed and strained, perhaps because of later movements in the region after the granitoid gneiss had completely solidified.

In many places also the granitic materials have augen structures, with rows of pinkish crystals, all oval and tailed out at the ends, suggesting movement since solidification.

Frequently there are two stages of the process of interbanding, *e. g.*, in one case a band of coarse granitoid gneiss eight inches wide was seen enclosing a narrow band of dark green schist of equally coarse grain, and carrying off also fragments of very fine grained green material with thin seams of pink. Here the earlier injected masses had cooled and then been swept away by fresh granitoid magma welling up from beneath, of a more fluid kind, capable of dissolving and absorbing the basic materials of the Keewatin more completely.

Thin sections of the granite belonging to this laccolith show that it contains a large amount of plagioclase (oligoclase), and should perhaps be called grano-diorite rather than granite, though its flesh color is characteristic in most places. It is very quartzose, contains muscovite, as well as biotite and oligoclase, with orthoclase or microcline as the feldspars.

Dikes extending into the Keewatin are finer grained, sometimes flesh colored and sometimes gray. A thin section from a flesh colored dike has the same constituents as the main granite, though with less biotite and more muscovite. A thin section of a gray dike rock has a fine grained ground mass of the same minerals as the other, but with more biotite, including, however, phenocrysts of plagioclase, often Carlsbad twins.

The adjoining Keewatin schist consists of hornblende, plagioclase and a little magnetite, probably minerals rearranged from some basic eruptive like diabase.

The Nipigon or Keweenawan Formation

Introduction

Overlying the granites and gneisses of the Laurentian with the greenstones and schists of the Keewatin there are in many parts of the Nipigon region much later rocks, sediments and eruptive sheets which have been variously named. Logan in early days spoke of them as the "Upper Copper-Bearing Series," which he studied in detail on Thunder Bay and followed up to the mouth of Nipigon river.[4]

As seen near Thunder Bay this formation is sedimentary in the lower part, but has interstratified "trap" layers towards the top and is crowned by an enormous "trappean overflow," the whole resting on the Animikie or "Lower Copper-Bearing Series." The sediments are white and red sandstone or grits, conglomerates with jaspers, etc., reddish and white limestone, calcareous shales or indurated marl, and another sheet of red and white sandstone. Logan gives a total thickness of 830 feet up to the foot of the upper sandstone, whose thickness he does not estimate. The overlying trap is said to be 6,000 to 10,000 feet thick in some places; it is generally amygdaloidal, and sometimes has its surface covered with concentric wrinkles indicating flow as lava streams or sheets.

As the conglomerates contain pebbles and boulders of jasper like those of the underlying Animikie, there must have been a considerable break between the two formations; but the sills of diabase spreading between the sedimentary rocks of the Animikie and the Keweenawan are of the same age and character, no doubt representing parts of the Upper Keweenawan lavas which have not reached the surface.

Dr. Bell and Mr. Peter McKellar, his assistant, mapped and briefly noted the geology of the Nipigon region, including the east shore of the lake, about 40 years ago. The red sandstones were thought to resemble those of the Permian and Triassic of Nova Scotia, and it was suggested they might be of the same age.[5] In a later report Dr. Bell gives the name "Nipigon Series" to the "Upper Copper-Bearing Series" of the Nipigon region and apparently abandons the idea of their being a Permian or Triassic age.[6]

In 1894 Mr. W. McInnes gives a short account of the Nipigon formation along the Canadian Pacific railway near Nipigon Harbor, and makes the interesting suggestion that the lake lies in a trough carved in the Nipigon series and its associated traps, restoring an old basin in the Archean. He considers the Nipigon series equivalent to the Keweenawan, the name introduced south of lake Superior for the rocks of Keweenaw Point in Michigan.[7]

In 1898, Mr. D. B. Dowling mapped the islands in the lake, and traversed Sturgeon river and a chain of lakes to the south. He makes a further suggestion in regard to the basin, that it was due to the settling owing to the removal of the molten material of the trap sheets from beneath.[8]

[4] Geology of Canada, 1863, pp. 70-79. [5] G.S.C. 1866-9, pp. 315-344.
[6] G.S.C. 1872-3, p. 106. [7] Ibid., 1894, Sum. Report A, pp. 49, etc. [8] Ibid., 1898, Sum. Report A, pp. 95, etc.

Finally Dr. W. A. Parks was sent by the Survey to complete the work on the northeast of lake Nipigon, so that a geological map of the whole district might be prepared.[9]

In spite of the fact that so many geologists have worked in the region, only summary reports have yet been published accompanied by sketchy maps without geological coloring.

Besides the members of the Survey, Messrs. Willmott and Flaherty have done economic work near lake Nipigon, especially east of Poplar Lodge and at the head waters of Red Paint river, with the object of locating iron ore deposits; but they have naturally paid little attention to rocks later than the Iron formation, such as the Nipigon series.

In the Report of the Bureau of Mines for 1906 observations of my own on some outcrops of the series are given incidentally. During the two summers spent there

Columnar diabase, Nipigon river.

materials have been collected for a somewhat more detailed account of these rocks as exposed along the railway, the river and the eastern shores of lake Nipigon. The name usually given to these sedimentary rocks and the associated diabases is Keweenawan, but at the numerous points where the sandstones, shales and limestones are lacking it is not very certain that this name really applies to the sheets of basic eruptive rock. In the Nipigon region they are apparently not amygdaloidal, but are chiefly laccolithic sills, very like the Logan sills, as Lawson has called them, in the Port Arthur district. Near Thunder Bay these sills occur in the Animikie series, but are, of course, later in age than the slates between whose layers they have spread out.

In the Nipigon region the sills are later than the Keweenawan sediments also, and form similar sills, but they may be of the same age as the lava sheets toward the top

[9] G.S.C., 1902, Sum. Report pp. 211-219.

of the Keweenawan, as found, for instance, on Michipicoten island. We may suppose that the surface volcanics, found in other parts in thick successions of amygdaloidal sheets, were thin here and have been eroded away, or were absent from the beginning. The idea of a "crowning overflow" forming the cap of all the hills must be given up, the sheets covering the hills having been injected between the sediment and then disclosed by the removal of the overlying softer rocks.

Physiographic Features

Every one is struck with the topographic features introduced by the sheets of "trap" or diabase, which gives flat topped hills or table mountains, with almost perpendicular walls formed of the rude columns into which the rock is divided by its vertical jointage. The surface of the sheet is often very flat, or gently undulating, and either horizontal or slightly tilted. The thickness of the sheets may reach 300 or 400 feet, so that almost unscaleable cliffs surround the hills, or make an abrupt end to gently inclined plains. At the foot of the cliffs a talus of blocks quarried by frost is always piled, often high enough to conceal the sheet of sedimentary rock which in many cases underlies the diabase.

The contrast is very marked between these flat topped, gray walled mountains and the Archean domes and ridges of pinkish granite and gneiss or green schists, having usually much gentler slopes and less regular forms. Often the diabase hills are isolated remnants surrounded by the more varied forms of the Laurentian and Keewatin rocks, from which the original covering of sediments and "trap" has been eroded, bringing to light once more the ancient topography, as noted by McInnes. Around lake Nipigon itself the sedimentary parts of the formation are very thin, and rise but little above the water or are not disclosed at all. Near Nipigon bay, along the shore of lake Superior, in many of the hills the lower part, sometimes to a height of 200 or 300 feet, consists of sandstone, limestone and shale usually brown or red in color, giving very striking scenery, red based hills topped with sombre gray. The old Hudson Bay post was called Red Rock, from the glowing color of the shales on the west shore of the bay.

Beside the flat topped diabase hills there are on the east shore of lake Nipigon ridges of very similar diabase, having hummocky and irregular tops and no well marked cliffs caused by vertical joints. One such ridge or range of hills runs several miles from northwest to southeast with a width of two or three miles between the Poplar Lodge iron claims and those of Wendigokan. These may be laccolithic masses, or, as has been suggested, gigantic dikes, eruptions probably of the same age as the sheets. Here the topography differs less from that of the surrounding Laurentian and Keewatin.

Faults in the Keweenawan

Logan and the later geologists have recognized that the region has been faulted into blocks which have been slightly tilted; and the fault planes, being lines of weakness, have suffered erosion faster than unbroken parts, so that the river channels are apt to follow the faults. This may be seen along the Nipigon river, where in some places steep walls of diabase rise on one side and low cliffs or hills of Laurentian on the other, the two sides of the river having totally different topographical features.

The actual plane of faulting on the large scale, forming the tilted blocks, is very seldom visible, having always been greatly shattered and attacked by weathering and erosion, so that it is in the lowest parts and buried under drift deposits. Faults on a small scale are however often seen, as on the cliffs a mile or two west of Kama, the next station on the Canadian Pacific railway east of Nipigon, where sediments and thin diabase sheets have been broken into blocks or slices and shifted two or three feet, so that a stratum that can be traced along the outcrop is divided into a number of fragments, all nearly horizontal but at different levels.

So far as observed all the faulting came later than the injection of the diabase sills, *i. e.*, in post-Keweenawan, probably Cambrian times: and may be accounted for by the settling of the beds after the removal of so much lava from beneath.

Relation of the Eruptives to the Sedimentary Rocks

It has already been mentioned that the Keweenawan diabase exists mainly as sheets which have spread out between the sedimentary rocks, and near lake Nipigon shows no amygdaloidal structure or ash or agglomerate beds, to suggest surface volcanic activity. If volcanoes once spread out sheets of lava in this region, as on Michipicoten island and Keweenaw point, the lavas and ash rocks have been destroyed. As in the Animikie the sheets cooled to form sills at a considerable depth, where the pressure prevented steam from expanding to produce the cavities which could later be filled with various minerals and form amygdules.

Since the thicker sheets make the tops of the hills, the softer rocks above having been removed, their contact with the overlying rocks is no longer to be seen, but the finer grain of the diabase, on the upper side indicates the cooling effect of their presence. In some cases curving lines of flow occur on the fine grained surface, as on Flat Rock portage near South Bay, and Logan describes and figures such markings from St. Ignace island, and looks on them as indicating the flow of lava streams.[10] Where there are no amygdaloidal layers or other indications of surface volcanic activity, these crescent-shaped wrinklings do not seem sufficient evidence of lava flow, and may be due simply to the dragging of the sluggish fluid as it spread beneath the overlying rock. Where the sheets are thin enough to show both surfaces with the sediments above and below, the diabase grows fine grained on each surface, and seems to harden and change the sedimentary rock. At the edge the two rocks blend and a paler gray band is formed by the fritting of shale or limestone. Some of the sills are only a few inches thick and often run out in feather edges.

While the sills generally keep to their level, there are cases where they ascend steeply from one level to another. About two miles west of Nipigon Station a thick sheet of diabase pushes up over the red shale at an angle of 40 degrees, crushing it and changing the color and texture of the shale, which is green and much harder, for ten or fifteen feet away. There are also places where the shale has been crumpled and contorted.

Immediately beneath some of the larger diabase sheets the limestone is often changed to marble, of a red or white color, some specimens being quite handsome, but so far as observed these beds are too thin to be of practical importance.

Keweenawan Sedimentary Rocks

Sandstone and Quartzite

Conglomerates have not been observed in the Nipigon region, though occurring not far to the west, on Thunder Bay. Coarse sandstones or quartzites are frequent, generally white or pale gray in color, but sometimes red or brown from oxide of iron between the grains. Half a mile west of Nipigon station a small railway cutting exposes a flat-lying bank of pinkish white sandstone, whose relationships to other rocks are concealed, but which is no doubt Keweenawan in age. It is a firm, medium grained sandstone with scarcely any hint of stratification, perhaps because the outcrop is not extensive. A thin section shows nearly pure quartz sand grains, with a very few feldspar grains, all usually well rounded and with dusty edges. The cement consists of a small amount of interstitial quartz. Except for its pale color, the stone would be excellent for building purposes.

Bands of pale gray sandstone or quartzite are found a mile or two west of Kama, near the foot of cliffs capped with diabase sheets. The beds are not very thick and pass into red-brown sandy shale. The rock is more compact than the one described above, and contains more of the feldspars. A thin section consists of about three-fourths quartz grains, and one-fourth of other materials often somewhat turbid in appearance, including orthoclase, microcline, and plagioclase and a certain amount of some car-

[10] G.C. 1863, p. 72.

bonate. There are also concretionary spherules, made up of microcrystalline silica and a carbonate. The quartz grains are often well rounded, and have been enlarged by a growth of clearer quartz till the individuals met and formed an interlocking mosaic.

White quartzite, very like that of the original Huronian north of lake Huron, occurs beneath the Keweenawan diabase south of Obabika bay, near the northeast corner of lake Nipigon. It is grayish white and very hard, and in thin sections proves to consist almost entirely of interlocking quartz. The original grains of sand contain many bands of minute bubble holes, and are rimmed by a little dusty material, while the new quartz, representing their outgrowth, is clear.

This quartzite has a more ancient look than the sandstones or semi-quartzites found near the shore of lake Superior to the south, which may be accounted for by the fact

Our party on eleventh portage, Red Paint river.

that a small dike of granite cuts the quartzite and the overlying diabase at this point, and that pegmatitic looking material penetrates it also at one or two places. If the diabase were absent one would be inclined to look on the quartzite as Huronian.

Shales and Slates

Shaly or slaty rocks are well developed in the Nipigon region north of lake Superior, but have not been noted on lake Nipigon itself. They are very variable in color, running from dark gray, almost black, to several tones of red and pale green.

A specimen taken from a cliff three or four miles west of Nipigon station is very dark gray, compact, not very slaty, but with a vague conchoidal fracture, and much resembles the Animikie slate near Port Arthur. A thin section proves to be exceedingly fine grained. Quartz in minute particles, scales of chlorite and probably also of sericite, and considerable amounts of dark opaque substance can be distinguished, the last probably some carbonaceous material, since slivers of the rock burn to a paler gray.

The ingredients are not evenly distributed, and there are oblong areas in which the dark substance is more thickly scattered.

A more common shale is brown red to purplish red in color, often spotted with small green spherules, or with patches and shreds of white, resembling shaly beds in the "Soo" sandstone at Sault Ste. Marie. This variety crumbles easily to small fragments when acted on by the weather. It has very little cleavage, but is distinctly banded parallel to the stratification. Some specimens effervesce a little with cold acid, but most are scarcely affected by it, showing that carbonate of lime is not an important ingredient. Under the microscope small particles of quartz and of a carbonate, probably dolomite, make up most of the sections, with a red brown matrix of iron ore. Some of the bits of quartz have crystal forms, but most are irregular splinters. The pale green patches are round, have no sharp edges against the ruddy parts, and seem to consist of the same materials without the iron oxide. A thin section from a somewhat purplish specimen shows a good deal of dirty looking indeterminable material between the quartz fragments, and much less of the dolomite. The white patches seem to consist partly of dolomite and partly of a scaly or fibrous mineral of uncertain character.

The green variety of shale is less extensively found than the red, and differs from it mainly in the absence of iron oxide. A thin section from a specimen altered by contact with a diabase sheet two miles west of Nipigon station is somewhat different in composition, containing much of a faintly polarizing scaly mineral, probably chlorite, and a good deal of dolomite. This rock passes in ten or twelve feet into ordinary red brown shale, and has apparently been formed from it by reduction of the sesquioxide of iron and the increased crystallization of chlorite.

Limestones and Dolomites

In the region studies limestones and dolomites occur in rather small quantities. In the outcrop four miles west of Nipigon station a band of gray dolomite two feet thick runs for a long distance, making a striking contrast with the red shaly rock above and below. The rock has been greatly crushed and recemented.

About six feet of fine grained marble, white with some reddish tints, is found at a bold promontory a few miles west of the Virgin islands, underlying a thick diabase sheet. The rock is handsome but is very much shattered, and its position beneath the diabase would make it difficult to quarry. This outcrop effervesces with cold acid, and so is limestone rather than dolomite. Thin sections show fine grained, closely interlocking calcite, with small amounts of some turbid substance. It is doubtful if any of the limestone or dolomite outcrops will be of value as furnishing building or ornamental stones, but material for lime burning may be obtained on a large enough scale for local purposes, in a region very deficient in that respect.

The Diabase of the Sills

The rock forming the sills or sheets which cap the hills so characteristic of the region is generally of a monotonous kind, medium grained dark gray, weathering to brownish tones, with a rude columnar structure. It regularly grows finer grained against the sediments, and never shows pillow or amygdaloidal structures. In general it is olivine diabase consisting of plagioclase (labradorite) to the extent of more than one half, brown or purplish brown augite about one third, olivine and magnetite in considerable quantities, a little biotite in some cases, and a few small prisms of apatite. The structure is generally distinctly ophitic, the lath-shaped feldspars projecting into the augite anhedra, which are often large enough to give a "mottle lustre" effect in hand specimens. The magnetite is generally in rather large masses, often including other minerals, as if it were one of the later substances to solidify.

Usually the rock is very fresh, though in some sections the olivine is partly or wholly turned to serpentine, and the augite has fringes of green secondary hornblende.

On the surfaces against the other rocks the diabase becomes much finer grained and is bluish black in color, weathering paler gray or buff. Thin sections show a quite different appearance from those of coarser varieties of the rock, having a distinctly porphyritic habit, with comparatively large crystals of plagioclase and a few of augite enclosed in a somewhat opaque ground mass and themselves enclosing remnants of glass. The ground mass is apparently a somewhat devitrified basic glass, through which are scattered many lath-shaped feldspars with ragged ends and often a dark core. In the brown turbid ground mass there are many black particles of magnetite.

Where the diabase cooled against dolomitic shale the usual red of the shale has been destroyed, the sesquioxide of iron being reduced. The black of the porphyritic glass becomes gray, perhaps by absorbing constituents of the shale, and the ground mass is less transparent, but there are still laths of feldspar contained in it, of the same kind and as thickly scattered as in darker parts of the rock.

The diabase presents also coarse grained varieties, having little ophitic structure or none at all, transitions to gabbro, but with the same mineral constituents. Often the weathering out of olivine leaves the surface pitted, and rock of the kind on the promontory west of the southeast bay of lake Nipigon and elsewhere is rapidly crumbling into a coarse sand of a green gray color. No very sharp line can be drawn between diabase and gabbro in the region, since both consist of plagioclase, augite, olivine and magnetite, the only difference being the lath or plate-like character of the feldspars in the diabase as contrasted with feldspars having diameters more nearly equal in the three crystallographic directions in gabbro.

Basic Phases of the Keweenawan Eruptive

Closely connected with the olivine diabase sheets described above, there are more basic olivine rocks, probably differentiation products of the same magma. Rocks of this kind are found at Virgin falls, near the outlet of lake Nipigon; and consist chiefly of augite and olivine in about equal quantities. Wedged into corners there is some plagioclase, and magnetite and brown biotite occur also in subordinate proportions. The olivine has good crystal forms, and with some of the magnetite came first in order of crystallization. The rock is more nearly a picrite than a gabbro.

Not far away from the point where this specimen was taken, below the first of the Virgin falls, a coarse variety of the basic eruptive has in part undergone deep seated change into actinolite and garnet.

A still more basic variety is found on an island just south of Halfway point, on the east shore of lake Nipigon, a dark gray rock of coarse texture with a deeply pitted surface. Thin sections are like those from Virgin falls, but with less plagioclase, about one-tenth of the whole, and more mica, deep brown and highly pleochroic. In this rock the olivine is badly weathered, serpentine running along all the fissures with patches of the unchanged mineral between.

The very basic phases of the olivine diabase are not wide spread, having been found only at the two points mentioned.

The dikes and bosses of diabase or gabbro found penetrating the older rocks, Laurentian and Keewatin, are of various kinds, some like the Keweenawan sills and probably filling the channels through which the diabase ascended, others without olivine and containing a little quartz, probably of an origin distinct from the sills. These outcrops are referred to in the account of the iron ranges and their associated rocks.

Post-Keweenawan Dike Rocks

At several points small dikes of a fine grained granitic-looking rock were found in the diabase sills, the first being seen on Flat Rock portage near the south bay of lake Nipigon, others being found later on Livingstone point and Obabikon point. At Flat Rock there are several very narrow dikes of the granitoid rock, the largest a foot

wide, occupying short fissures in the diabase or following the boundaries of a rude columnar parting. The rock is fine grained, and has the usual flesh color of granite. The largest dike observed has a width of 30 inches and cuts quartzite and the overlying diabase on a promontory a mile southeast of Ombabika narrows. It could be followed 100 yards inland; and in the quartzite near by there were a few narrow interlacings of coarser granitic looking material. Thin sections show the rock to be grano-diorite rather than granite, in spite of the pink color, since the feldspars are mainly plagioclase, the amount of orthoclase being small. Quartz is present to the extent of about one-quarter, partly in rude pegmatitic forms, and a little hornblende and brown biotite occur in one specimen, while decomposition products representing some ferro-magnesian mineral are found in small amounts in the other. The plagioclase, which has the

Muskeg, Height of Land, Red Paint river.

characters of oligiclase, commonly shows fairly well developed crystal forms of clear mineral in the centre, with an irregular outgrowth of weathered feldspar round them. These little dikes of grano-diorite occur frequently, and seem rather widely spread from one end of the lake to the other, being found in most of the sheets of diabase which we had an opportunity to study on well exposed surfaces. None have been seen in the other rocks of the region, perhaps because they have not been looked for; and it seems as if they were bound up with the Keweenawan eruptives, perhaps as a last differentiation of the original magma, penetrating cracks and wider fissures of the cooling diabase.

The grano-diorite is, of course, later than the diabase sills, which probably reached their present positions at the very end of the Keweenawan, while lava and ashes were being distributed on the top of the Keweenawan sediments. These acid dikes are, therefore, of Cambrian or even later age, and the most recent solid rocks known in the region.

Geology of Nipigon River

Although so many geologists have gone up Nipigon river, there is no detailed account of the geology of its shores. As the river is visited by hundreds of tourists and fishermen every year, it seems worth while to point out roughly the distribution of the rocks as observed during our four journeys up and down. As we were always *en route* to points beyond, no time was permitted for elaborate work on the river, yet the main points were noted, and some of the portages were carefully studied.

Where the upward journey begins on lake Helen, sand plains representing an old water level of lake Angonquin (an ancient glacial lake) cover the solid rock, with a tree-covered moraine between them and Nipigon station. Beyond the east shore of lake Helen one sees Laurentian country with a hilly, rolling surface, and a few higher flat topped hills with steep cliffs caused by remnants of Keweenawan diabase sheets. Turning through a marshy delta after five miles on the lake, one enters Nipigon river, with low banks of stratified clay and sand, partly cultivated by the Indians.

At camp Alexander, the first portage, granite comes up beneath the old lake silt on the southeast shore and a cliff of diabase rises on the other side of the rapid. The portage road runs first over lake terraces of sand and gravel, afterwards over bouldery moraines, and no solid rock is seen until one reaches the upper end, where the river is once more canoeable. The rapids begin over red granite and fine gray gneiss, like the Couchiching of Rainy lake, but half a mile down, a ridge of coarse diabase rests on the granite for 100 yards.

Probably the pre-glacial channel of the river was to the west of the present one, the morainic material rising as hills on the portage road and to the northwest, having been piled up in such a way as to block the valley and force the water in to the present channel.

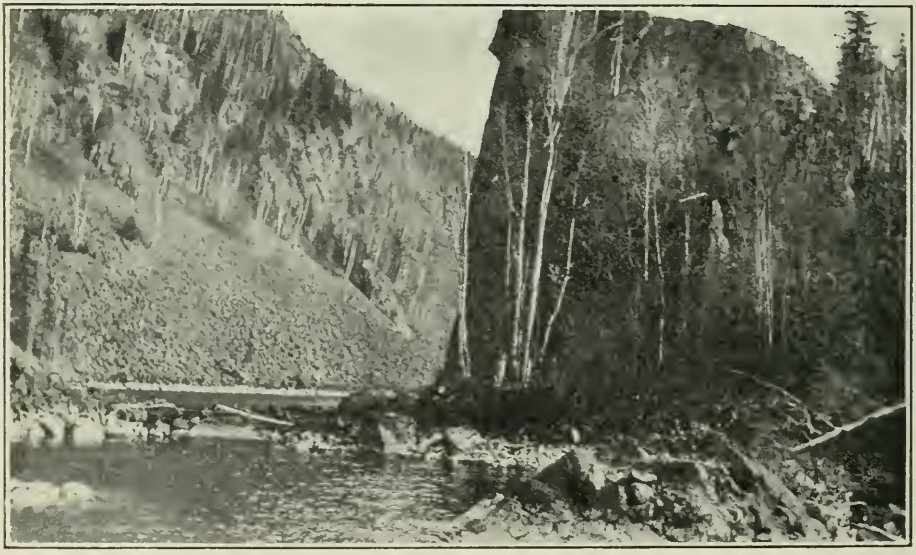
On the east side of the river above the rapids there are low hills of red granite, and also a small patch on the west side under the moraine. Above the narrows the east side shows mainly gray or green Keewatin schist, steeply tilted and penetrated by red granite and pegmatite dikes, some of which contain large black crystals of tourmaline, probably dikes from the granite region to the south. On the west side diabase rises, and a mile south of Split rock portage a sill of diabase covers the Archean on both sides of the river, rising to the east as splendid vertical cliffs. The nearest cliff has a height of 450 feet above the water, talus covering the lower part, and a diabase hill half a mile inland is much higher. The rock which "splits" the rapids is a huge mass of the same diabase sheet.

From the Split rock portage to Island portage diabase rises on each side, but the river has cut through it to the underlying Keewatin. The portage leads over a small low island of nearly vertical gneiss, gray and fine grained, with a strike of 40 degrees, closely resembling the Couchiching gneiss of Rainy lake.

Soon after this Pine portage is reached, the river having low shores at this point with no cliffs of diabase. At the foot of Pine portage there is greenish gneiss or mica schist with garnets, but the road passes overy bouldery morainic ridges to the upper end, where coarse, black diabase rises above the quiet waters of the river on each side. Cliffs of diabase wall in the channel from this to Little Flat Rock portage, which crosses a low nearly flat sill of the same rock. Diabase extends all the way from this portage to the next at Victoria rapids, and seems to reach as a low flat surface past Hannah lake on the west to the shore of the South bay of lake Nipigon.

From this point one may reach lake Nipigon in three ways: by lake Hannah and Big Flat Rock portage to South bay; or straight up the river to Virgin falls, where the portage runs first over stony moraine, then over flat eruptive sheets more basic than diabase; or one may turn to the east over a bouldery portage to a pond, through another pond and then cross a portage to a bay of lake Nipigon above Virgin falls, all over morainic materials. It is probable that this series of ponds represents an old outlet of the lake, blocked by moraines left by the last ice sheet.

Split Rock, Nipigon river.



Split Rock, Nipigon river.

Pleistocene Geology

Old Lake Deposits

In last year's report brief references were made to the Pleistocene deposits of the Poplar lodge and Wendigokan areas[11] which are covered to the extent of about one-third by sand plains, old lake deposits formed probably in a great northern bay of lake Warren; and the observed levels of the plains were given, reaching from 860 to 1,020 feet above sea level. The lowest sand plains rise only a few feet above lake Nipigon which has an elevation of 852 feet.

Stratified beach deposits, Nipigon river.

Our past summer's work has greatly extended the known area of these old lake deposits, which reach as far as Battle Island lake, more than 30 miles east of the shore of lake Nipigon. Here we still have the usual sand plains rising about 20 or 30 feet above the water of the lake, which was roughly determined by hand level and estimation of the falls and rapids on Sturgeon river as 1,044 feet. From this the sand plains would stand at 1,060 or 1,070 feet above sea level. How much farther they extend inland is not known.

In some cases boulder clay may be seen at the bottom of sections cut by Sturgeon river through the drift deposits, rising a few feet above the water, then well stratified silt, sometimes 100 feet thick, followed by sand and coarser materials forming the top of the series of deposits.

[11] Bur. Mines, Vol. XVI., pp. 135 and 147-8.

In one section above the first falls on Sturgeon river there are 73 feet of silt followed by a layer with angular boulders, like till, as if the silt were interglacial, but the slipping of materials on the cliff above made the relations somewhat uncertain. Above the bouldery bed was stratified sand reaching 90 feet above the river or 994 feet above the sea. On Sand lake, much higher up the river, whitish silty sand was found for a few feet above water, followed by sand, with a level surface about 1,060 feet above the sea.

In many places the sand plains are uneven in surface, with depressions and small ridges or low gently rolling hills, perhaps representing the work of currents on a delta or in some cases dunes caused by wind work.

Most of the sand plains have the look of delta deposits, probably formed by a post-glacial Sturgeon river coming into a lake standing much higher than at present in early stages, but gradually sinking toward the present level of Nipigon. Deposits

Glaciated rocks south of Poplar Lodge.

of the same kind are now in process of formation at the mouth of Sturgeon river, varying and shifting in different seasons by the swinging of the river channel at its outlet. Smaller streams, like Sand creek at Poplar lodge, are doing similar work on a corresponding scale. The sinking of the level of lake Warren and its successors seems to have been stepwise, to judge by the succession of terraces.

How far north the stratified lake sands extend is not yet determined, but they are found well developed at the first falls on Red Paint river a few miles above its mouth, where the portage trail crosses a flat sand plain about 100 feet above the river below the falls, which is perhaps a foot or two above lake Nipigon. Beyond this to the northeast no well defined old water levels were observed as far as the watershed between lake Nipigon and Hudson bay.

Some low sand tracts have been noted along the shore of lake Nipigon beyond Red Paint river, but none rising more than a few feet, and it is doubtful if the higher beaches extend quite to the northeast side of the lake, where the drift consists of morainic materials little modified by water action.

Glacial Deposits

Toward the southern end of lake Nipigon from Sturgeon river towards Virgin falls, most of the low ground is hidden by sand plains and muskegs, as mentioned above, and typical morainic deposits are not often seen. Along Nipigon river, however, characteristic moraines occur as stony ridges at several places, and appear to have played a large part in turning the river out of its ancient channel, thus producing rapids.

Inland from the mouth of Sturgeon river several of its rapids are over boulders derived no doubt from boulder clay, and, as noted by Mr. Moore, moraines occur near Lake Wendigokan, but the most striking examples of glacial deposits are found near Trap lake, where kame ridges, eskers and bouldery hills are found. To the south one finds sandy till with sub-angular stones where fallen trees have upturned the soil, and much of the surface is covered with low ridges or hills, probably morainic.

The water shed northeast of the head of Red Paint river consists largely of moraine country, gravelly hills and kettle-shaped valleys, often enclosing lakes, occurring over many square miles, probably deposited at the margin of the ice where a great glacial lake confronted it toward the southwest.

Very bouldery morainic hills may be seen at Revillon post on the northeast side of Ombabika bay also.

Striated Rock Surfaces

Striated rock surfaces are quite widely found along the east shore of lake Nipigon, where the waves are just washing away the drift from the underlying rock. Inland in most cases the rocks are too much weathered and lichen-covered to show them, but strippings on the Iron ranges often disclose them. In the previous year striae running from north 60 degrees to 70 degrees were found near Poplar Lodge, and during the past summer many other ice smoothed and scratched surfaces were seen, in some cases showing two sets of striations, an older one displayed only in hollows or sheltered spots, and a newer one better preserved and more widely spread. Directions of striation were determined at a few points, as follows:

Shore of lake Nipigon north of Sturgeon river	45 degrees
Portage between Pasha and Ida lakes	60 "
River mouth south of Humboldt peninsula	80 "
Mouth of Red Paint river	85– 95 "
Mouth of Ombabika bay (older)	10– 35 "
Mouth of Ombabika bay (younger)	70–100 "

II.—IRON RANGES EAST OF LAKE NIPIGON

THE ONAMAN IRON RANGES

BY E S MOORE

Introductory

The writer was instructed by Mr. T. W. Gibson, Deputy Minister of Mines, to conduct a geological exploration of the Iron ranges around the head waters of Red Paint river. After assisting Dr. Coleman in finishing the work begun during the summer of 1906 on the Iron ranges of the Sturgeon River region, the writer proceeded to this new field and began work there on July 29th, but in September was compelled by bad weather to leave the field before the survey of the ranges was complete. The autumn snows and rains came early, and on the return journey heavy gales accompanied by sleet and snow were encountered on lake Nipigon, causing considerable delay in reaching my destination

In the field the writer was ably assisted by W. F. Green, B.A., fellow in Toronto University, who in every respect proved to be efficient in his work. Besides Mr. Green and the writer, there were in the party two very faithful Cree Indians, John and Henry Jeffries, of Moose Factory, and for a short time an Ojibway Indian, who proved unsatisfactory and was soon discharged.

Until quite recently, little was known concerning the geology of the district surrounding the head waters of the Red Paint. References had been made to its resources in some of the Canadian Geological Survey reports, but geologists had not done any detailed work there. Dr. W. A. Parks mentions in a summary report[1] that some claims containing deposits of limonite and ochreous hematite in sugary quartz seams running parallel to the inclosing schists had been staked by Andrew Green on Red Paint lake, the source of the south branch of Red Paint river. He says further that though jasper had been reported from the Red Paint river, neither the Algoma Commercial Company nor the Flaherty syndicate had located it.

Some prospecting had been done by the Algoma Commercial Company on the lower parts of the Red Paint river during the time that company was so actively engaged in exploration work in the Nipigon region and a few claims were surveyed. These claims lie along the stream near the ninth or "Red" portage about 21 miles from the river's mouth, but they were never of any commercial importance.

When the Transcontinental railway survey parties began work through northern Ontario, about five years ago, the Red Paint river became one of the highways for the transportation of mail and supplies, not only for the railway surveyors, but for a number of prospectors who entered the new region. The most energetic prospecting was done during the summer of 1906 when a considerable Iron range was located by men in the employ of Mr. R. H. Flaherty, and their strikes encouraged other prospectors to enter the field, but the majority of the latter were unsuccessful. During the following summer while our examination of the ranges was in progress Mr. Flaherty did diamond drilling on his claims. The complete drilling outfit was transported up the Red Paint and down Johnson creek a distance of about 55 miles, by use of canoes and packstraps, a feat which is probably unique in the history of mining in Ontario, if not in that of Canada. During the same season a range was located farther south, which appears to be the most extensive yet found in the region.

The writer has applied the term Onaman to the Iron ranges in the area explored because of a desire to have some euphonious and appropriate name for them, and

[1] Sum. Rep. Geo. Sur. 1902-3, pp. 213-222 A.

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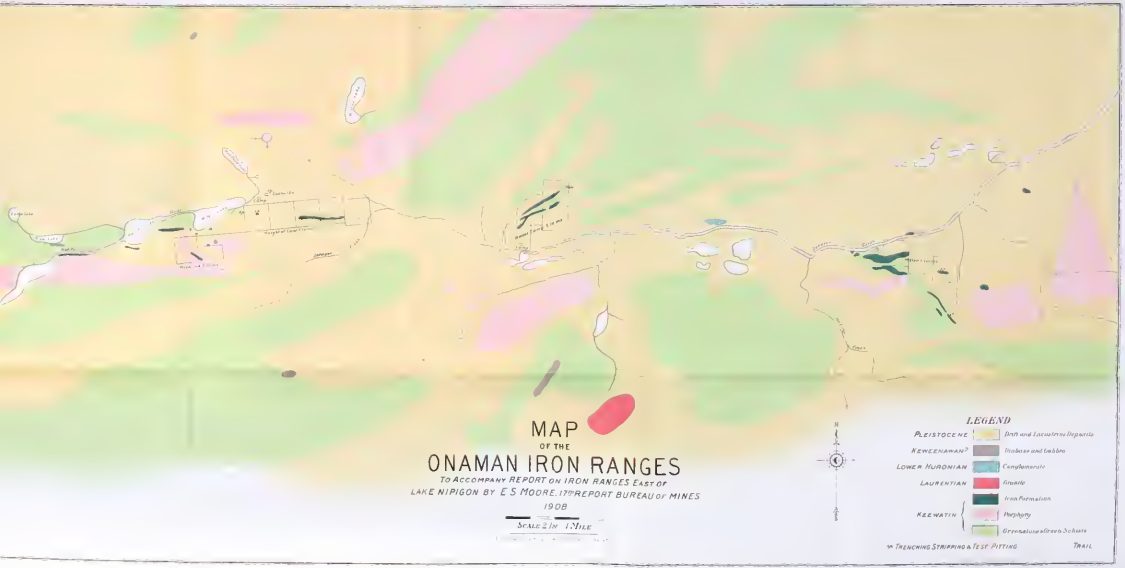

MAP
OF THE
ONAMAN IRON RANGES
TO ACCOMPANY REPORT ON IRON RANGES EAST OF
LAKE NIPIGON BY E.S. MOORE. 17TH REPORT BUREAU OF MINES
1908
SCALE 2 IN. = 1 MILE
LEGEND
PLEISTOCENE
Drift and Lacustrine Deposits
KEWEENAWAN?
Diabase and Gabbro
LOWER HURONIAN
Conglomerate
LAURENTIAN
Granite
Iron Formation
KEEWATIN
Porphyry
Greenstone and Green Schists
Trenching, Stripping & Test Pitting
Trail

because of the difficulty of applying any other local name without danger of its being misleading. The word Onaman is the Indian name for Red Paint, and the term seems to be appropriate for all the ranges discussed in this report, and for those which in the future may be found in their vicinity.

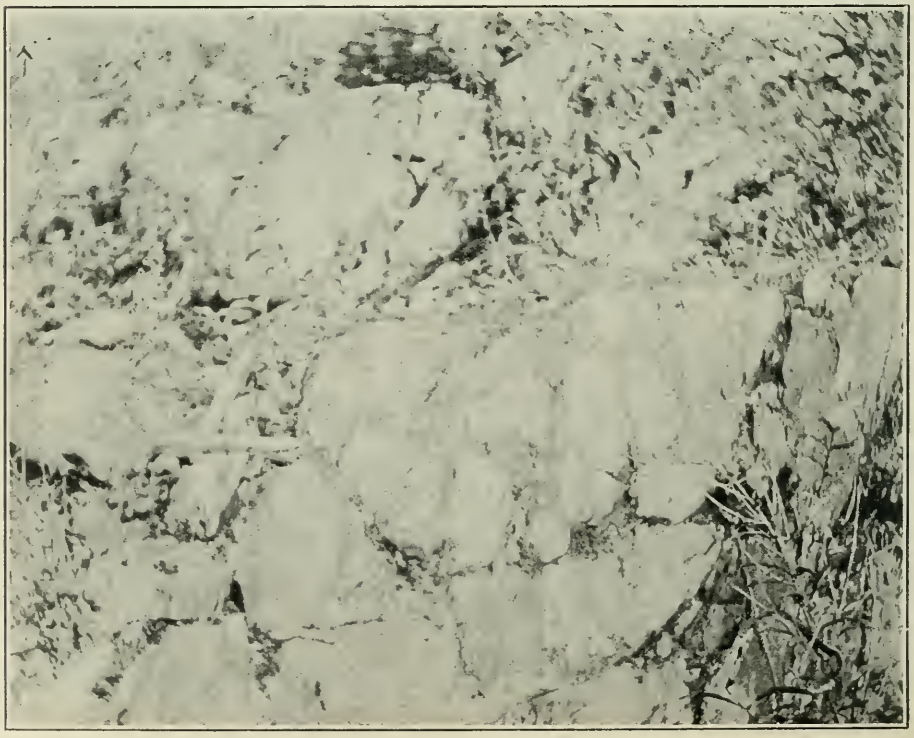
As in previous seasons, many favors were received from those who were met in the field, and this opportunity is taken of acknowledging them. Special thanks are due to Mr. P. A. Leitch for assisting us in various ways, and to Mr. R. H. Flaherty who placed all available information in regard to his work in the region, at our disposal. In connection with the preparation of this report, the writer is indebted to Dr. A. P. Coleman of Toronto and Professor Iddings of Chicago University for the counsel they have so generously given him.

Flaherty's diamond drill, Height of Land.

Geographical Position of the Iron Ranges

The Onaman Iron ranges occur in the vicinity of the Height of Land, one of the great continental divides, near the head waters of Johnson creek and Red Paint river. The area included in the Iron range district so far explored is between latitude 50° and 50° 30' and between longitude 87° 10' and 87° 45'. To reach the region it is necessary to make by canoe a journey of about 50 miles in a general northeast direction from the mouth of the Red Paint river, which enters Humboldt bay, the northeastern expansion of lake Nipigon. In time of high water this stream is easily navigated with canoes, but it becomes very low in the summer, and travelling is difficult, especially in the upper portion of the river where the stream is very crooked. Although there are twelve portages, the longest, which is around a long rapid about six miles above the mouth of the stream, is only two-thirds of a mile in length but has at its lower end a troublesome hill rising rather abruptly about 75 feet above the river. The other portages vary from less than half a mile to a few yards in length,

Second portage, Red Paint river.



Agglomerate, twelfth portage Red Paint river.

and are all well cut out. To cross the Height of Land requires a portage of about one and one-quarter miles over one of the best trails found anywhere in the country.

Although some important sand banks are seen on the lower parts of the stream, in passing up the Red Paint, one is impressed by the lack of the definite and high banks so characteristic of the Sturgeon river farther south, by the absence of high hills of any kind, and the prevalence of large swamps on either hand. A great deal of the rock along the stream is granite, and the knolls of this rock rising above the surface of the swamp give the typical Laurentian country. Several bands of Keewatin rocks are seen. The first of these occurs at the first, second and third portages, and is responsible for the rapids at these places. The next is at the ninth or "Red" portage, where a little Iron formation occurs, and the third one begins near the lower end of Oboshegegon (Narrow) lake, and extends along Whitefish lake and "Crooked creek" to the Height of Land. The remainder of the rock along the river is granite and diorite, chiefly the former, and belongs to the Laurentian system.

A number of lakes occur on the river. The largest of these, lake Oboshegegon, is about six miles in length and as its Indian name indicates is narrow and swampy. The upper lakes are rather shallow, and have hard clay or marshy bottoms.

Surveys

As no township or lot lines had been run in the region one of the survey lines of the Transcontinental Railway was made use of and was found of great service in forming a base to which our work could be tied, for purposes of a geological map. It was necessary to procure all the materials for the map by pacing compass lines, and this proved a difficult task on account of the bad brulé on the high lands, the wet swamps where the land was low, and the presence of some magnetite over many parts of the area, necessitating the frequent use of the dial compass during a season predominantly wet and cloudy. It is matter for regret that at the time of writing the final survey of the railway line cannot be obtained and placed on the map to accompany this report. The claim lines which are mapped are only those run by the prospectors, and though usually well run for a region in which local attraction is so troublesome, they should not be regarded as surveyors' lines.

Soil and Vegetation

Much of the land in the region has been burnt over at different times, leaving the larger part of it covered by a tangled mass of dead jack-pine and spruce. Some parts of the burnt area, especially the hills of drift, are now covered by a very dense undergrowth of spruce, jack-pine and poplar which adds to the difficulties of travel, but the burning of the moss and other vegetation from the rocks has greatly facilitated the ease with which these can be examined by the prospector or geologist. During the summer of 1906, which was very dry, great bush fires raged along Johnson creek, burning nearly everything combustible from the surface of the ground and leaving the hills of drift which occur there almost as bare as a cultivated field.

The land which has not been burned is covered with swamps and muskegs. The timber of these swamps is mostly small, and much of it scrubby cedar, spruce, balsam and tamarac, almost all of it not large enough for anything but ties or pulpwood. Along the lower stretches of the Red Paint river, however, chiefly between its mouth and the second portage, there is some good spruce and tamarac timber, which will in time be utilized for lumber and other purposes. White birch is very common on the morainic hills of the unburned areas. No red or white pine was seen in this district.

It is said that the great clay belt of northern Ontario extends almost to the Height of Land in this region, and this is probably the case, as the hills here gradually give place toward the east to great flat areas covered by muskegs and

Typical "brulé," Height of Land, Red Paint river.

Our camp in burnt region, Johnson creek.

swamps over which the new railway line will have many miles of straight and almost level track. Although some of the flats along Johnson creek are sandy, and the hard stratified clay is found not far below the surface, there are many acres of land capable of growing good crops, as the soil on these is a clay loam. Considerable land along the lower reaches of the Red Paint would also be suitable for agricultural purposes, and there is little doubt that with a railway through this region, the land will some day be producing some kinds of crops and be capable of supporting to a large extent a mining population, if the country produces mineral wealth. The greatest drawback to the agricultural prospects of this northern region are the late spring and early autumn frosts, but if the land were cultivated these would become less

Beaver house, Black river.

severe than they are at present, just as they have been mitigated in many other cultivated regions. The long days with so much sunshine permit rapid growth, and small fruits are abundant. Wild strawberries grow on the clay flats, and blueberries are plentiful on the rocky and sandy ridges.

Fauna

The beaver is the most interesting animal in the region, and is fairly common. These animals are so bold that some of them attempted on one occasion to dam the Red Paint at the outlet of Holliday lake where canoes frequently passed to and fro. Some moose were seen, and caribou frequent the woods, especially during the colder seasons, but there is a marked scarcity of red deer in the whole of the Nipigon region east of the lake. Partridge and grouse are plentiful, the latter appearing in largest numbers in the spring, about the time the snow begins to disappear. The

region is looked upon as a favorable one for trappers of small fur-bearing animals, and many marten, fisher and muskrat are taken during the winter. Fish are not so plentiful nor so fine as they are farther south, but plenty of pike are found in the streams and lakes. Some pickerel may be taken from the lakes, and a few brook trout have been caught in Johnson creek.

Topography

According to information obtained from the bench marks along the railway location there is a difference in level of 191 feet between the mouth and head waters of the Red Paint river. The stream has an average fall of about four feet per mile, and this is concentrated in a number of falls and rapids which vary in height from two to fifty-four feet, but the amount of water in the stream at some seasons is too small to make it a valuable one for power purposes.

The continental divide in this region is not conspicuous as a ridge, and in some places there is almost continual swamp across it with streams issuing westward on one side and eastward on the other, the water of the former reaching the Atlantic by way of the great lakes, and that of the latter going to James bay by the Albany river. The highest point on the portage crossing the divide has an altitude of 1,070 feet, but a little farther northwest some of the gravel hills form a ridge with an altitude of 1,150 feet, and similar hills extend eastward along Johnson creek at an elevation of 1,100 feet above sea level.

Taking the country as a whole, there are no great variations in level. No matter in what direction one goes he encounters no great hills, and finds that there is not anywhere a difference of more than about 175 feet in elevation, between the lowest stream valleys and highest hills. The region has the appearance characteristic of the great Archean peneplain of northern Ontario, which has been formed by the reduction to a general level of most of the once prominent hills, leaving a few monadocks where harder formations rise above the surrounding lands.

The large deposits of terminal moraine along Johnson creek with the small outwash plains, undrained depressions and kettle lakes form rather conspicuous topographic features. There is a difference in elevation between the top of some of these drift hills and the undrained depressions lying in them of about 75 feet, and as the hills have been so thoroughly burned off by the bush fires they stand out as prominent features which can be seen for many miles.

Johnson or Old Log creek, a sluggish stream meandering through a marshy plain forms part of the canoe route to the east. The amount of water flowing in it varies greatly in different seasons. During the summer of 1906 it was a small creek along which it was difficult to pass with canoes, but in 1907 it was swollen from bank to bank and formed a good sized river. Along its lower stretches it flows mostly through muskeg, and at all seasons there is plenty of water for canoes.

Classification of the Rocks

The rocks of the region may be tabulated thus:

PLEISTOCENE	Drift, lacustrine sands and clays.
PRE-CAMBRIAN	Keweenawan (?)—Basic eruptives: gabbro and diabase.
	Lower Huronian (?)—Conglomerate and arkose.
	Laurentian—Granite, gneiss and diorite.
	Keewatin: Iron formation; slates, jaspilytes, banded silica and magnetite.
	Keewatin: Porphyries (felsites) and tuffs.
	Keewatin: Greenstone and green schists.

Although the rocks are classified in this order, they are not so arranged without uncertainty as to the age of some of them.

The greenstones are typically Keewatin and are unusually well developed in this region, while some of the porphyries are hard to locate in the age classification, because

they have been so intimately folded into the Iron ranges that they appear either as dikes or other masses cutting the Iron formation, or as extrusions which were interbedded with it. There are some rather basic dikes cutting the Iron formation on the Height of Land claims, but these have not been connected with any other rock masses of the district. The greater part of the porphyries are true rhyolites or surface lava flows, and there is little doubt about their being in most cases older than the Iron formation. This formation is similar to that in other regions where the Iron ranges are of Keewatin age and marks the upper horizon of this system.

The Laurentian granite and gneiss are common on the lower part of the Red Paint, and are reported from three sides of the Iron range district, but they are scarce within the region mapped. The diorite is placed with the Laurentian rocks, because the small mass found seemed to grade into granite and to be a contact phase of that rock.

There is no reason for placing the basic eruptives in the Keweenawan, except some resemblances to other Keweenawan rocks so well developed in the Nipigon region. There are no younger rocks associated with them by means of which their age can be determined.

The Iron Formation

There are two distinct Iron ranges and some scattered outcrops of the Iron formation in this region.

One of these ranges extends from the twelfth portage on the Red Paint river eastward across the Height of Land and down Johnson creek for a distance of about six miles. The range is not represented by continuous outcrops, and the strike of the formation varies in different places on account of irregularities in the folding of the sedimentary rocks caused by the massive igneous rocks associated with them. These massive igneous rocks of the Keewatin system are very prominent here, while the green schists, slates and pyroclastic rocks are not nearly so well developed as they are in the Sturgeon river or Michipicoten region.

On account of this predominance of igneous rock there are not long stretches of synclines and truncated anticlines with uniform strike, but a more broken and irregular arrangement of the folds in the sediments, and the latter now remain where folded into the hollows between prominences of igneous rock. Since the Iron formation lacks the great troughs formed by folding of thick strata of sedimentary rocks, it will probably prove to be shallower here than it is in these other regions mentioned where schistose and sedimentary rocks are abundant. There seems to be one syncline extending along the north side of the range on the Miller claims. The presence of this syncline is shown by the dip of the rock in these places and the conglomerate lying in the trough. The trough is bottomed mostly by igneous rock, as shown by the felsite dipping under the range along the south side and the greenstone along the north side. If any ore is found in this range it may be looked for in this syncline and a short distance north of the southern edge of the range. The folding and crumpling of the Iron formation is very acute in some places, and definite faulting has occurred in one part of the range.

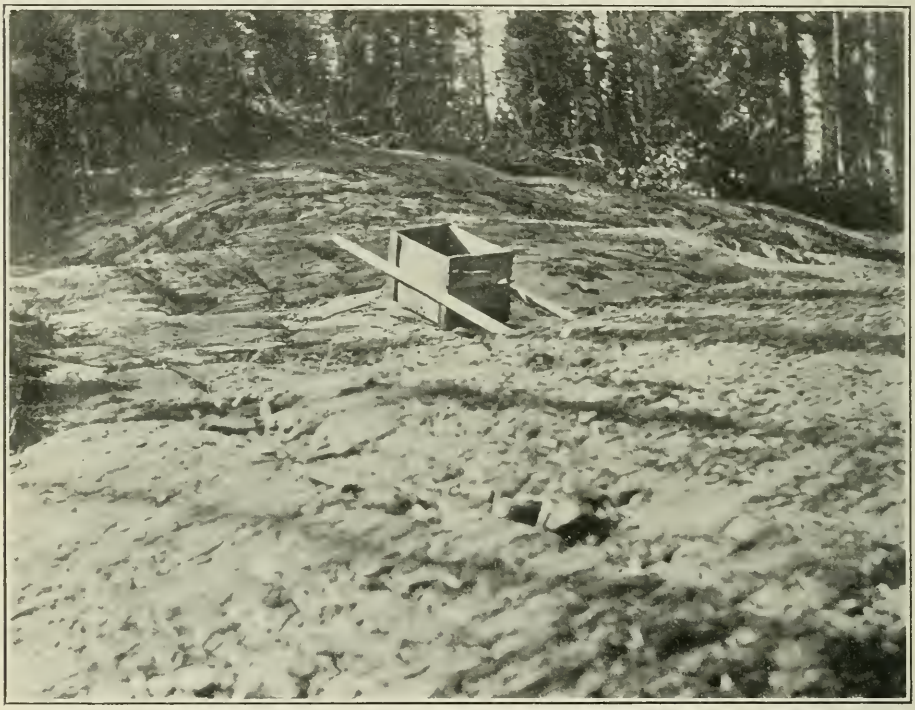
The other range occurs between two and three miles south of the one described and runs nearly parallel to it. This range has not been traced to its limits, but it is exposed for about two miles and then runs into swamp, where its extension can be followed by means of the dip needle. It has many of the characteristics of the range to the north but appears to be more free from country rock.

The country rock of both ranges is chiefly altered quartz porphyry or orthoclase porphyry, and it is often intricately folded into the Iron formation. The rocks and iron-bearing minerals of the formation are slate, green schists, jaspilyte, specular hematite, magnetite and silica.

Besides the two ranges mentioned, there are some rather isolated outcrops of no commercial importance, such as those at the "Red" portage and those on lake St. Marie.

The Maple Leaf Claims

A short distance south of the eastern end of Holliday lake there are two chains which comprise the Maple Leaf group. The Iron formation in these claims is not so important as in some of the others, as the bands are narrow and much mixed with schist. The country rock is mostly a schistose felsite which was originally a quartz porphyry and has become almost unrecognisable by metamorphism. Some



Stripping on Iron range, Height of Land Red Pain,t river.

of the felsite strongly resembles a conglomerate on the weathered surface, because of its brecciated structure which is emphasized by weathering. Besides the altered porphyries, there are some green schists associated with the range, and these are partly meta-igneous rocks and probably partly metamorphosed pyro- and auto-clastics.

Height of Land Claims

In this group there are five claims extending across the Height of Land, and the Iron formation outcrops on four of them. Considerable stripping and trenching has been done, so that the range is well exposed in several places, and in one exposure it reaches a maximum width of 175 paces, but in this width there is included a good deal of schist.

The strike of the rocks is nearly east and west with a gradual change to about 70° near the eastern end. They dip at a high angle northward.

The iron-bearing rocks and minerals here are bright red well banded jaspilyte, magnetite and specular hematite.

The rock along the south side of the range is a slaty chloritic schist, and there is also associated with it some orthoclase porphyry, which seems to have been folded into it in a complex manner. On the north side green schist is followed by an arkose, which is probably related to the conglomerate exposed farther east. The arkose and green schist are exposed for only a short distance before running under a large mass of drift, and the Iron range disappears in drift and swamp at either end.

There are two dikes cutting the Iron formation on the middle claim of this group. The widest of these is about three feet in width, and cuts slightly across the strike of the jaspilyte while the other one cuts it at nearly 45°. Both dikes are composed of basic rock so altered that they could not be identified. The presence of dikes in an Iron formation is an important feature, as they have played a large part in the formation of the ore bodies in Minnesota by forming basins for the reception of the concentrated ores, but in this case there is no evidence that concentration has occurred.

The Winter Camp Claims

The Iron range disappears under swamp near the east end of the Height of Land portage, and reappears almost two miles farther east. Just north of the small lakes on Johnson creek there are four claims on all of which the Iron formation outcrops. As there is some magnetic attraction in the swamp along the intervening space, it is pretty certain that some of the formation is buried under the drift.

The range on these claims is split by a long greenstone mass running parallel to the general strike of the iron range rocks which is here about 60°. The relations between the greenstone and Iron formation have been brought about by strike faults occurring along either side of the greenstone mass, which was in each case on the upthrow side of the fault. The presence of these faults is shown by the slickensided surface which may be seen in a hand specimen, being unusually well preserved on the hard jasper, by the greatly shattered condition of the jasper, and the abrupt transition from the Iron formation to the greenstone. It may be noted that in the regions of Keewatin rocks there are not, under normal conditions, sharp transitions from the Iron formation to the massive greenstone. This condition is due either to the fact that some other rocks have always been deposited on the greenstone before the jasper was formed, or that where the jasper lay directly on the greenstone the latter weathered in such a way that the former was easily removed by erosion.

The faulting is evidently much more recent than the great folding which included the Iron formation, because when the latter occurred this formation must have been buried deeply, otherwise the brittle jasper would never have assumed symmetrical folds but would have been shattered, as it is in the outcrop where the faults have occurred.

The fault plane of the northwest fault is apparently nearly vertical, as the contact has been shifted laterally very little. The drill hole which was put down in this outcrop shows that the dip of the plane must be at least as much as 65°, because a hole 351 feet deep at an angle 60° failed to reach the greenstone where the width of the jasper on the surface is about 300 feet. The dip of the fault plane being unknown, it is impossible to estimate even approximately the depth to which the Iron formation may extend beneath the drill holes, but it is probably deep since the fault plane is so nearly vertical.

The plane of the fault on the southeast side of the greenstone mass does not appear to be nearly so highly inclined, as the contact has shifted down the dip much more than it has along the other fault. The dip of the Iron formation here is about 85° southeast.

The shattered condition of the rocks on these claims has permitted the circulation of water containing sulphates or sulphides in solution, and iron pyrite has been freely deposited as a secondary constituent in part of the Iron formation and much of the greenstone. This pyrite is weathered on the surface to iron oxide giving to

the rocks a reddish stain. The formation on these claims is very hard, being composed largely of jasper, but it contains enough magnetite to make the compass useless in the vicinity of the range.

As mentioned previously, diamond drilling was done on these claims last summer. A hole was sunk in the jasper northwest of the fault plane, it being considered that a concentration of iron oxide might have occurred along the fault. Through the kindness of Mr. R. H. Flaherty, under whose direction the drilling was done, it was learned that the hole, which reached a depth of 351 feet directed at an angle of 60° toward the face of the hill and nearly at right angles to the fault plane, was entirely in jasper. There seemed to be little difference in the rock as the hole deepened.

The Miller Claims

About three miles east of the Winter Camp claims and lying along the south side of Johnson creek there are three 40-acre claims. The Iron formation is exposed on only two of them, but the appearance of the range on either side of a swamp covering the centre claim and local attraction in this swamp indicates a continuation of the range beneath it. The outcrop begins at the creek a little west of the western claim, where it is indicated by narrow bands of jasper or magnetite and silica lying in wider bands of slaty schist. The schist is so prominent that the range is of no importance until the western claim is reached, where a mass of jasper and banded silica and magnetite is exposed in trenches. The range crosses the claim, disappears beneath swamp and reappears on the eastern claim of the group, where a mass of bright red jasper has been exposed by stripping. This outcrop is 275 paces long and at widest exposure 30 paces in width. The strike is 100°, and the dip about 55° northward. The formation dips under swamp along the north side, mixes with schist on the south and disappears in drift and swamp at either end. One striking feature about the range here is the fine polish left by the glacier on the folded jasper, which is so hard that it has retained this polish almost perfectly.

At a distance of half a mile in a direction of 100° the range again outcrops on the side of a hill rising 40 feet above the swamp which extends away to the north. The outcrop here is 280 paces in length and in the widest part is 100 paces in width. The formation is composed of jasper and banded magnetite and silica in a slaty schist. A thin section of this schist showed under the microscope an indefinite fairly fine grained ground-mass in which there were numerous crystals of magnetite and some of pyrite. Most of the pyrite crystals were partly oxidized to magnetite, and showed the origin of some of this mineral. There were also crystals and fragments of tourmaline, generally lying along definite lines, having no doubt assumed this arrangement under shearing stresses. The minor folding in the range is complex, and some narrow bands of jasper have been so doubled up and then nipped off, that in a few instances pebble-like masses have been left in the slaty schist. This is an exceptional way for such fragments to be formed, but every stage of the process may be found somewhere in the range.

The formation dips northward under a large swamp at an angle of 80°, and the outcrop drops down into swamp to east and west. On the north side it is underlain by a felsite with apparent brecciated structure. Following out the general direction of strike of the range, it would cross a large mass of quartz-porphyry, or rhyolite, lying on the other side of a valley, and therefore the outcrop described represents the most eastern extension of the range.

On the western claim of the Miller group, Mr. Flaherty had a hole drilled to a depth of 139 feet at an angle of 52° south. There were four feet of mantle rock and the remainder of the hole was in jasper and greenstone, there being altogether 31 feet of the former. This shows that the formation at this point is comparatively shallow and that the felsite dips under it. It also strengthens the writer's opinions, formed previously, that the formation would not prove to be very deep over most of the syncline.

Other Outcrops on this Range

Lying in the large swamp northeast of the Miller claims is a small outcrop of Iron formation composed of schist and jasper which is of importance only in showing the extent of the range in this direction. There are a number of outcrops extending from the 12th portage on the Red Paint along the lakes eastward toward the Height of Land. These are not important, but represent the continuation of the range in this direction. A number of claims have been staked on these outcrops, but no development work has been done.

South of the Miller claims there are some scattered outcrops and stringers of the Iron formation. The strike of the rocks there is about 100°. The jasper lies in green schist which is connected with the schist of the main range to the northwest, and this offshoot appears to be due to the large masses of igneous rocks which have caused an irregularity in the folding of the sediments by compelling them to assume the form of a syncline between prominences of massive rock.

Although a number of claims have been staked on these outcrops and some pits dug through the drift for exploration purposes, there does not seem to be any important development of the Iron formation here.

The Bain Claims

During the spring of 1907 a prospector named C. Bain located an extensive outcrop of the Iron formation about three miles south of the Height of Land portage. The writer visited this range late in the season and expected to return to complete the examination and mapping of it, but was compelled to leave the field before this was accomplished. As the exploration of this range as well as some of the other outcrops in the region will probably be continued during the coming field season, only a brief account of it will be presented and no analysis of ore from it will be given at this time.

Six claims had been staked and a considerable amount of stripping done, so that the range was well exposed. In one trench the range was stripped transversely for 80 feet and it was nearly free from schist. Another trench 130 feet long shows the formation in the trench to be composed largely of jasper. Magnetite and specular hematite are common constituents of the formation, and in some cases the percentages of these are high enough to make low grade ore. The amount of hematite is greater comparatively towards the eastern than at the western end.

The range fingers out into schist at the west end and runs under swamp to the eastward, but judging from the effects of magnetic attraction it continues some distance east while obscured from view beneath drift and swamp. The association of the Iron formation with the country rock is much the same as on the range farther north. An altered white porphyry extends along the southern side of the range and in some places is closely folded into it. In another place the formation is cut by an irregular mass of diabase. The strike of the rock is about 95°, and it runs nearly parallel with the range to the north. The dip is generally about 70° northward, but it varies to 90°.

Trombley's Claims

There is a group of claims locally known as Trombley's claims lying along St. Marie lake about eight miles west of the Height of Land portage. Some interest was attached to these on account of the reports that pyrrhotite was the iron-bearing mineral of the formation there. A short visit was paid to the district, and a lean iron range was found containing pyrrhotite and pyrite as secondary constituents, the Iron formation having been greatly brecciated by the intrusion of diabase so that solutions could permeate the rocks and form deposits of the sulphides.

The range has a maximum width of 500 feet with a strike of about 50°, and dip which varies from 45° to 90°, as the rocks have been greatly displaced by the igneous intrusions. The range is apparently of no commercial value.

Iron range, C Bain's claims, Height of Land, Red Paint river.

Typical prospector's camp, C. Bain's claims, Height of Land.

A specimen of the Iron formation was examined in thin section, when it showed a banded rock composed of crystals of quartz, many of them six-sided and with small grains of magnetite along certain lines. The quartz crystals along the bands colored darker by magnetite were generally of smaller dimensions than those between these bands, which may be due either to the sands which were deposited at the time the magnetite was formed being finer grained than those deposited at other times, or to the detrimental effects of the magnetite on secondary crystallization. Both the macroscopic and microscopic appearance of the rock is that of a recrystallized sandstone with dark bands of magnetite running through it.

Iron Formation on the Red Portage

A number of years ago the Algoma Commercial Company surveyed a number of claims around the ninth portage of the Red Paint river. This portage is commonly known as the "Red" portage, because the surface of the ground over which the trail passes is stained red by hematite. There is no iron of commercial importance on the claims, but there is a band of the Iron formation lying along the lake just below the portage and extending across the portage, gradually mixing with and being lost in the country rock. The formation consists of a banded sugary quartz rock; which might be a recrystallized sandstone, containing small streaks of magnetite. As the contact between the Iron formation and the Laurentian granite lies along the lake, the former has been greatly affected by the intrusion of the latter, and as in every other case observed, where a large mass of igneous rock intrudes an Iron range, there is a dissemination of pyrite through the range. This deposit of pyrite may be due either to percolating waters which accompanied the intrusion, or to disseminating gases; very probably the former. As to whether the iron of the sulphide accompanied the intrusive rock, or whether sulphur vapors or solutions which were associated with it acted upon some of the iron oxide in the range, converting it into sulphide, is not clear. The sulphide here has weathered on the surface to hematite and yellow ochre. Along the south side of the outcrop of the Iron formation there are garnetiferous schists which have been developed by the contact action of the granite on the Keewatin rocks.

Lower Huronian (?) Conglomerate and Arkose

The conglomerate is not nearly so widely distributed in the Onaman Iron range region as it is in the Poplar Lodge and Wendigokan regions. The largest outcrop found lies along Johnson creek a short distance above the Miller group of claims. There a ridge 450 paces long and 120 wide stands about 25 feet above the stream, and disappears on all sides beneath drift or swamp, so that no contact with any rock is visible. Another very small outcrop appears above the drift near the Iron range on the Miller claims, and is no doubt a continuation of the ridge already described. About two miles farther east here is a small outcrop of rock which might be mistaken for conglomerate, but it is very probably a brecciated quartz-porphyry.

The pebbles of the conglomerate so far as observed are all of acid porphyry.

A thin section of this conglomerate was examined and numerous round and angular fragments of quartz were found. Some of these had been crushed and largely recrystallized. Some masses of iron pyrite were scattered through the rock as if deposited from solution around crystals of other minerals which acted as nuclei. There were fragments of tourmaline crystals and these were without exception surrounded by iron pyrite, though there is no particular reason known why they should have been. The tourmaline was probably derived from the quartz-porphyry which supplied the pebbles for the conglomerate, and which generally contains a good deal of this material.

There are a few outcrops of arkose in the region which are doubtless associated with the conglomerate, but they are so scattered and small that they were not

definitely worked out. One of these occurs along the north side of the Iron range on the Height of Land, and a thin section of this rock shows it to be composed of fragments of feldspar and quartz, among which there is a good deal of iron carbonate mostly arranged around their borders, numerous crystals of pyrite, a little chlorite with some magnetite—probably derived from the chlorite and associated with it—and small amounts of hornblende and biotite. Another specimen was taken about a mile and a half north of the Height of Land. This contains some fragments of quartz slightly rounded, and around each fragment of quartz and feldspar there is a coating of iron oxide. This arkose has the composition of one which might have been derived from the disintegration of a quartz diorite. Possibly some of these arkoses represent formations of small extent formed on the land by small streams washing materials from the high land and depositing them on the flats.

Greenstones and Green Schists

The typical meta-igneous greenstones of the Keewatin are well developed in this region. Large areas are covered by massive greenstone which in many places shows, in its brecciated and pillow structures, abundant evidences of its extrusive nature. These rocks have retained their massive condition to a much greater extent in this region than in some of the other Iron range regions, and on this account there does not seem to be the usual great series of schists developed from them. They have intermingled with porphyries to a large extent, the greenstones representing the basic lavas and the porphyries the acid lava flows. These rocks are too much altered to be suitable for study in thin section, though in some cases they retain their structures sufficiently well to indicate that they are largely composed of diabase usually carrying a little quartz. One section showed considerable leucoxene which is an alteration product of ilmenite, and forms brown aggregates, which are highly refracting and if transparent, highly doubly refracting. In incident light the mineral is white.

The green schists are more highly developed west of the immediate neighborhood of the iron ranges than within it. There is a large area of them extending westward from the Height of Land and down the Red Paint to lake Oboshegegon. These schists have been developed from rocks of various types, and no attempt was made to separate them from the greenstones in the mapping of the region, nor to work out their origin. They represent metamorphosed greenstones, porphyries, tuffs, and probably arkoses and graywackés.

The Acid Porphyries and Tuffs

In no other Iron range region with which the writer is familiar is there such a development of porphyritic rocks of the acid type. Although there are in this region plagioclase-porphyries, orthoclase-porphyries and quartz-porphyries, they are almost all old lavas and can be regarded as felsites, or ancient rhyolites. They are all more or less metamorphosed and often without definite structure in macroscopic specimens.

They are so intimately connected with the two main Iron ranges of the region that a geologist in the field is often uncertain whether they have been folded into the Iron formation, intruded into it, or interbedded with it as extrusive masses. So close has the folding been that field relations are obliterated. One large mass of plagioclase-porphyry about a mile north of the Height of Land portage contains macroscopic phenocrysts of plagioclase, with rhombic outlines similar to those in the rhomben-porphyry of Norway. One striking feature of the felsites is the brecciation of the rocks. This structure probably originated when the cooling lava rolled and cracked as it flowed along, and is best seen at the twelfth portage on the Red Paint, where there are fragments as much as eight inches long. It is more or less common in most of these rocks, in many cases being emphasized by weathering action. Some of

the finer grained types of quartz-porphyry have the appearance of horn and in some respects resemble chert, so that a mass of it is locally known as "Chert Mountain." Along the Bain claims the surface of the felsite is in places nearly white with a coating which will readily rub off. This is probably an efflorescence of calcium or magnesium carbonate.

As these rocks make good thin section, a number of them were examined. One section from a specimen of the felsite along the south side of the Bain claims shows phenocrysts of microcline; some of these have been crushed, and recrystallization has occurred along the edges of the crystals. The phenocrysts lie in a fine grained groundmass of quartz and orthoclase, much of which is weathered to muscovite. The groundmass has been largely recrystallized, and it is quite probable that the microcline is recrystallized orthoclase, as microcline is not found as a pyrogenetic mineral in lava flows. There is a large amount of tourmaline which exists as euhedral prismatic crystals, generally long and rather slender, with bluish color and very strong pleochroism. This mineral is probably pyrogenetic, as the crystals have been dragged and broken during the shearing processes which have affected the rock. A few crystals of apatite are present.

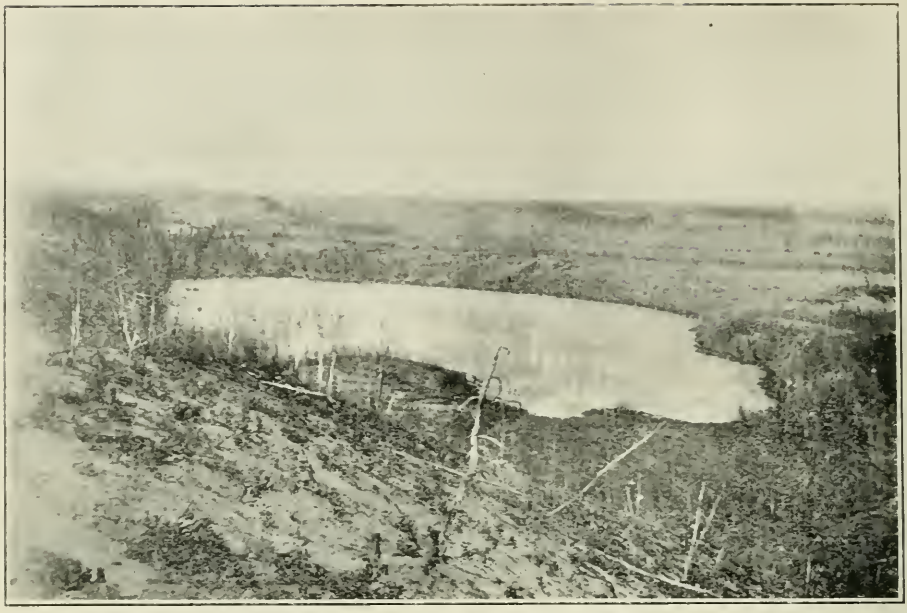
Another specimen was taken from the large mass of felsite east of the Miller claims. This rock contains numerous rounded phenocrysts of quartz as well as of weathered potash feldspar. The rounding of the quartz crystals is supposed to be due to the corroding action of the ground-mass and is characteristic of the phenocrysts of recent quartz-porphyries. There is a little tourmaline in this rock as well as some magnetite, pyrite and calcite. The pyrite is largely coated with iron oxide.

About one mile south of the kettle lakes lying along Johnson creek a couple of miles west of the Miller claims, an interesting dike about two feet wide was found. The rock is of a light gray color on the weathered, dark gray on the fresh surface, and spotted white with feldspar phenocrysts lying in a fine grained groundmass. Some plates of light and dark mica are also to be seen in the hand specimen. A microscopical examination shows the rock to be an orthoclase or syenite-porphyry, with distinct phenocrysts of orthoclase twinned according to the Carlsbad law. One crystal of plagioclase has a composition between that of andesine and labradorite, and another shows zonal structure in a combination probably of albite and anorthite. The biotite has mostly changed to chlorite. Several plates of phlogopite contain small alteration crystals of iron oxide and fine rutile needles, the latter with a radiating arrangement. A good deal of recrystallization has occurred and some flow structure due to crushing and shearing is seen. Some small crystals of apatite are scattered through the groundmass, which is composed largely of feldspar and secondary mica.

The tuffs were not recognized in many places in the region. On the Winter Camp group there is an outcrop of tuff which lies beneath the Iron formation. It contains a good deal of iron carbonate weathering brown on the surface to a depth of one-quarter of an inch, and it has a sort of banded structure which is doubtless due to bedding. It has a composition much like that of an arkose, but differs from it in having much more carbonate than usually occurs in the arkose of the region and in the absence of liquid inclusions in the quartz. It has the composition of a pyroclastic rock corresponding to a quartz-porphyry. In this region are doubtless considerable masses of tuffs now so completely metamorphosed as to be indistinguishable from the other green schists, but taking the region as a whole there is a marked scarcity of this type of rock when compared with the Michipicoten or Sturgeon river regions.

The Laurentian

Three bands of Laurentian granite and gneiss occur along the Red Paint river. Around the mouth of the stream there is a large mass of gneiss, where the processes by which banded gneiss is derived by the inclusion of masses of Keewatin greenstone in the granite and the subsequent rolling out of the same, are remarkably well



Kettle lakes, Johnson creek.

Kettle lakes, Johnson creek.

illustrated. On the third portage where the second band of granite comes in contact with the greenstone there is a little diorite, which seems to grade into the granite and to represent a contact phase of that rock. This band is found on all portages as far up as the eighth, and the contact between it and the greenstone occurs just below the ninth or "Red' portage. Granite appears again just above this portage, and extends to near Lake Oboshegegon.

The only Laurentian found in the region mapped is a small mass of hornblende granite about 300 paces in diameter lying about two miles southeast of the small twin lakes on Johnson creek. This probably represents an offshoot of the main granite body which is said to be exposed about six miles south of the Height of Land portage.

Basic Eruptives

There are numerous outcrops of diabase and gabbro scattered over the iron range district. The age of these is uncertain, because there are no younger and few older formations associated with them, but on account of their resemblences to the other Keweenawan rocks so common in the Nipigon region, they probably represent isolated bodies in some way related to the larger basic eruptive masses around the lake, and the writer has classified them in the same system.

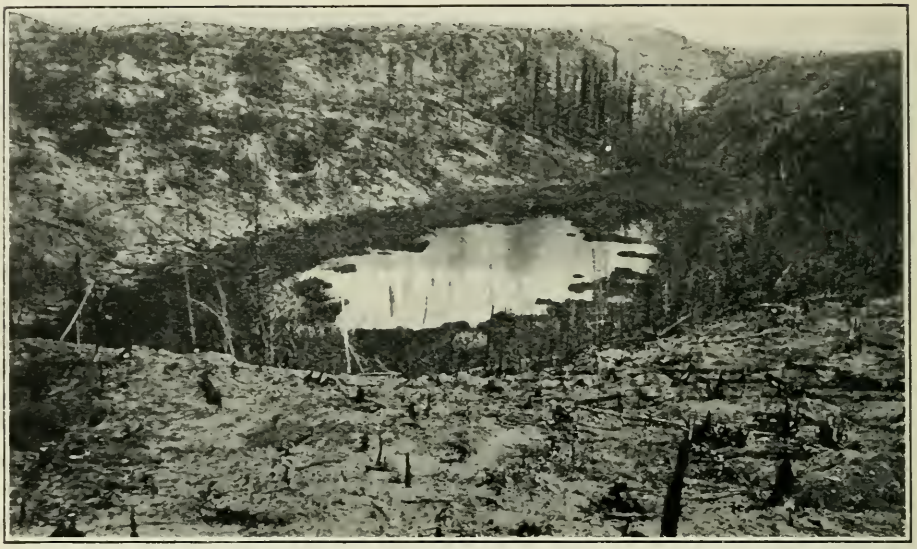
The largest outcrop observed lies on the trail between the Height of Land portage and the Bain claims. There a batholith of gabbro about 270 paces in extent has broken through the greenstone and carried off fragments of it. Along the south shore of Nixon lake a portion of a diabase dike about 30 paces wide was seen, but it could not be traced any distance on account of the drift which overlies it. The general direction of the dike is 110°, and it is probably exposed in other places farther east. Some masses of diabase and gabbro have broken through the iron ranges on the Maple Leaf and Bain claims.

About a mile and a half south of the Height of Land portage a specimen of quartz-gabbro was taken. It was blotched with yellowish green minerals resembling serpentine, but which under the microscope were found to be labradorite feldspars partially altered to chlorite. The quartz crystals contained little inclusions of apatite. The ferro-magnesium minerals were augite, partly altered to chlorite, and hornblende, and much iron pyrite some of which had been oxidized to magnetite.

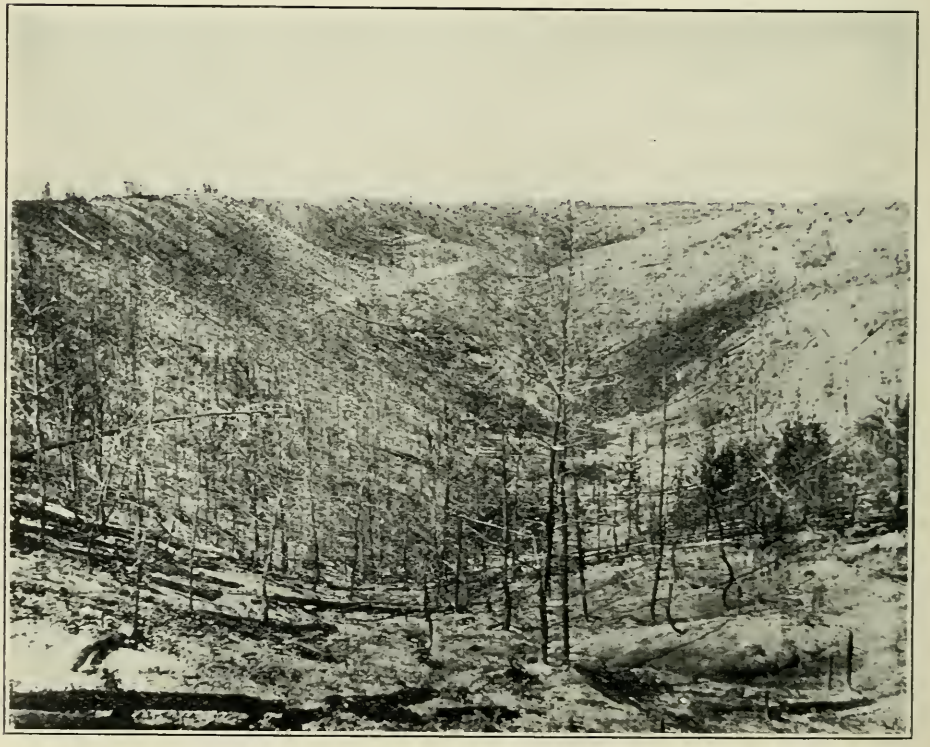
Gabbro is the most common of these basic rocks, and it generally occurs in small bosses or batholiths.

Pleistocene Geology

The first portage on the Red Paint river crosses a well developed sand and clay plain having an elevation of about 75 feet above lake Nipigon. Between the first and second portages a continuation of this plain is seen rising about 30 feet above the stream, but as one proceeds up the river the sand and clay banks become less conspicuous. Around the Height of Land there are many flat areas covered with stratified clay and silt, and though some of these may have been covered by local glacial lakes, most of them represent portions of the bottom of the large lake which covered a great part of the Nipigon region in Pleistocene time. Some stratified gravel and coarse sand are also found around cache 12 A, and the pebbles of the gravel are often coated with lime carbonate. Above these stratified deposits there rises a series of irregular morainic hills with no signs of terraces along their faces nor evidence that they have ever been covered by water, and the writer concluded that the ice had for a time formed the north shore of the lake, but that the outlet had been changed so as to lower the surface of the lake, and consequently at the time these hills were formed its border did not reach as far northeast as the Height of Land. Unless our calculations are in error there are sand plains on Battle Island lake, an expansion of the Sturgeon river, with an altitude of at least 1,090 feet, which is greater than that of some of the drift hills in this region that do not appear to have been covered by the lake.



Kettle, near Height of Land.



Dry Kettle, Johnson creek.

On the north side of Johnson creek about five miles east of the Height of Land there is a fine series of drift hills which have been swept perfectly bare by bush fires, and now form conspicuous features. They rise about 90 feet above the stream and among them are numerous depressions some of which contain kettle lakes, there being as many as six of these visible from one of the hilltops. North of these hills there is a large area covered by ground moraine with extensive swamps which are characteristic of ground moraine regions.

This series of hills extends almost directly westward for at least ten miles, and in places the hills reach an elevation of 1,200 feet above sea level. They also extend to the east, and on the southeast side of Johnson creek about three miles from the Miller claims a series of hummocky ridges begins and extends as far east as the eye can reach. One low esker was seen extending with serpentine outline nearly north from these hills.

Another smaller group of hills, among which there are four kettle lakes, is found on the south side of Johnson creek, between the Miller claims and the Height of Land. These hills probably represent the deposits of moraine made at the edge of a lobe which was for a while extended about a mile farther south than the main ice front.

This great series of terminal moraine hills represents the deposits made where the edge of the glacier remained nearly stationary for a long period before it finally retreated rather rapidly northward.

The striations made on the rocks by the ice have a direction of 60° where they were noted. The directions of these striations may be made use of by the prospector as indicating the general direction from which the boulders of Iron formation have come, and thus assist him in locating an Iron range. Although some of these boulders may travel great distances, the greater number of them are of comparatively local origin. The finest examples of glacial polishing which the writer has ever seen were found on the jasper of the Miller claims.

THE IRON AND STEEL INDUSTRY OF ONTARIO

BY GEORGE CLEGHORN MACKENZIE

I.—Historical and Statistical Review

NOTE.—The statutory ton in Canada is 2,000 lb., but the standard in almost universal use in buying and selling iron ore and pig iron in Great Britain, the United States and Canada, is the English or "long" ton of 2,240 lb., and throughout this article the latter is employed, unless it is expressly stated that the "short" or "net" ton of 2,000 lb. is intended.

The early history of ironmaking in Ontario is, with one exception, a chronicle of disaster and failure in the attempt to produce iron from our native ores. Many thousands of dollars were spent in opening up mines, building furnaces and manufacturing charcoal, and although some of the pioneers in the industry were fairly successful at the start, and apparently could make pig iron at a profit, the business languished and failed to take root.

It must be remembered, however, that the iron-masters had then what would be considered now-a-days almost insurmountable difficulties to contend with; the methods of transportation were crude and costly; the old fashioned furnaces consumed much fuel to make a ton of iron; and, most important of all, there were very few men in the country who thoroughly understood the operation of the blast furnace, much less the proper methods of smelting the hard, dense magnetic ores of the back townships.

The Catalan forge did not seem to play any part in Ontario, or Upper Canada as it was then called, in the making of iron. This is somewhat remarkable, as many of these primitive furnaces were being worked at that time in the United States, and it is natural to suppose that early Canadian ironmasters would have followed suit. The Catalan forge, it should be explained, yielded impure wrought iron, and under the most favorable circumstances could not produce more than 300 pounds of metal daily.

Early Efforts at Ironmaking

A very complete description of the first attempts made in Upper Canada to manufacture iron will be found in the Report of the Royal Commission on The Mineral Resources of Ontario, 1890, page 319. The following notes have been taken largely from this report.

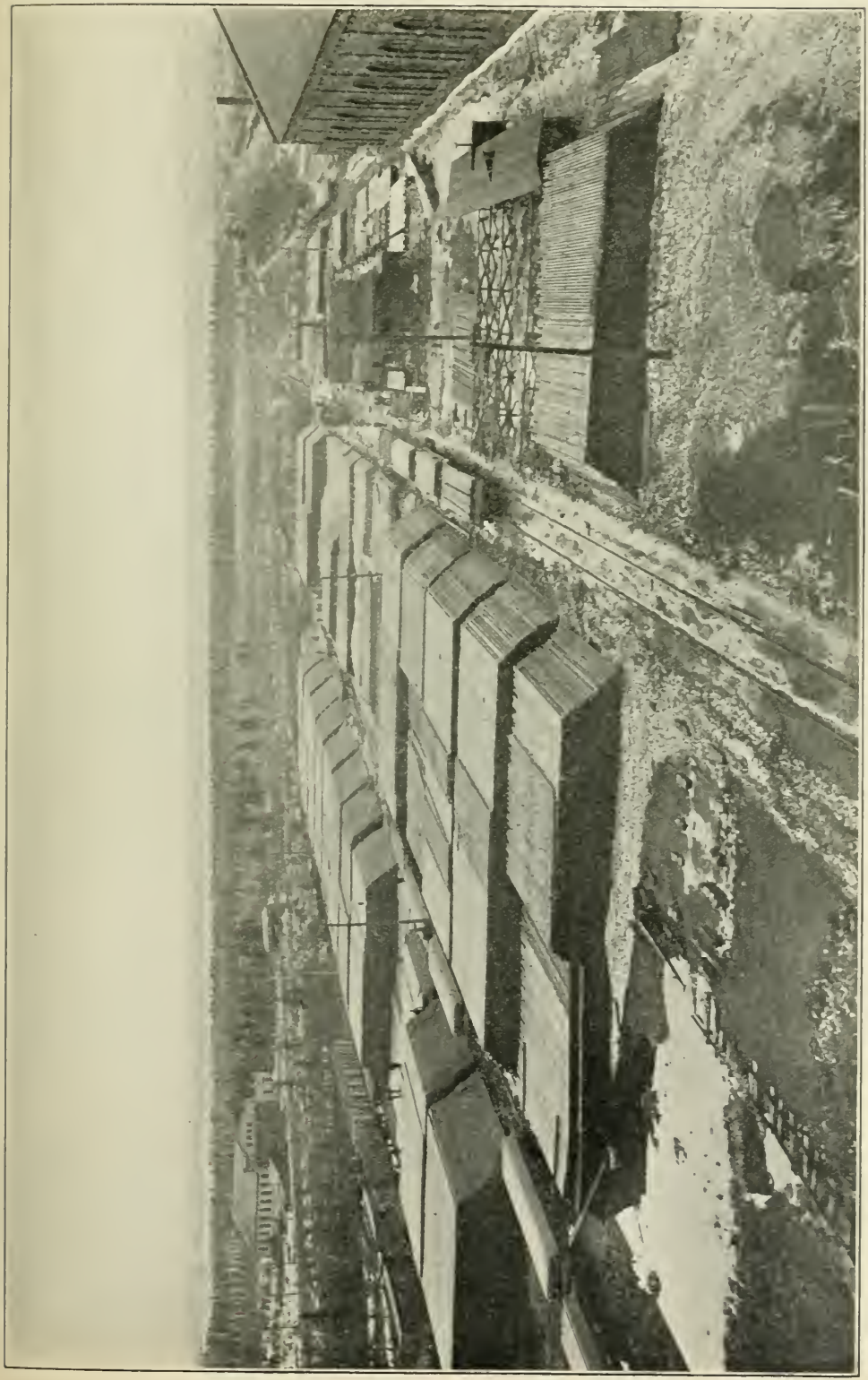
Furnace Falls

About the year 1800, four men, Ephraim Jones, Daniel Sherwood, Samuel Barlow and Wallace Sutherland, formed a company for the purpose of making pig iron. They built a furnace at what was then called Furnace Falls, on the Gananoque river, in the county of Leeds. The ore used was of poor quality, and had to be hauled a considerable distance. Attempts were made to cast pots and kettles for the settlers, but after two years of unsuccessful work the furnace was abandoned as a failure.

The Normandale Furnace

John Mason, an Englishman, was the next man to make the attempt. He built a furnace on the shore of Lake Erie at the mouth of Potter's creek in the township of Charlotteville. The creek was large enough to furnish power for the old fashioned wooden blowing engine, and the lake was convenient for shipping the product. That Mr. Mason had plenty of troubles will readily be seen from the following extract of a letter he wrote to Robert Gourlay in 1817:

I want five or six pieces of cast iron each 30 cwt. These will come to an enormous expense. I intended to ask Government to give or lend me six disabled cannon for this. I asked Government to pay the passage of five or six families from England to work in the furnace. This could not be granted, and therefore I would not ask for the cannon. Another thing against me is, that there is not a man in the country that I know of capable of working in the furnace. But the greatest difficulty I have to overcome is iron-men, as we call them, are the very worst sort of men to manage, colliers



Rail storage yard, the Algoma Steel Company, Sault Ste. Marie, Ont., April 1st, 1907, showing 73,000 tons rails stored for opening of navigation.

not excepted. Not one of a hundred of them but will take every advantage of his master in his power. If I have just the number of hands for the work, every one of them will know that I cannot do without every one of them, therefore, every one will be my master.

Mr. Mason's furnace had hardly been blown in before the inner lining gave way, and the whole enterprise was given up in despair. Mason soon afterwards sickened and died.

The works remained idle until 1820, when they were bought by Joseph Van Norman, who in the following March formed a company with Messrs. Hiram Capron and George Tilson. These men expended $8,000 on improvements and repairs, and in 1822 the furnace was again in blast under the management of Joseph Van Norman, who gave the name of Normandale to the locality. The bog ore supply was found within a radius of twelve miles or so, and drawn to the furnace in wagons. The yield of iron from the ore was about 33 per cent., nine tons of ore being consumed daily to make three tons of pig iron. Charcoal was the fuel used and the consumption per ton of iron produced was very high. The furnace was in blast eight or nine months of each year, producing 750 tons of iron and using about 4,000 cords of wood. Allowing 40 bushels of charcoal to the cord of wood, it will be seen that 213 bushels were consumed per ton of pig iron.

There being no sale for pig iron, the whole of the output was made into various kinds of castings, stoves, kettles, etc., and shipped to ports along the lake shore from Fort Erie to Amherstburg. A considerable amount was hauled into the interior for the retail market. There was little money in the country in those days, and what the farmers had to sell was brought to the furnace and exchanged for wares or due bills of the company. Due bills for iron were used as a circulating medium over a large section of the Province, and at one time the books of the company showed an amount of $30,000 outstanding.

After five or six years Joseph Van Norman bought out the interests of Messrs. Capron and Tilson and took in his brother Benjamin, who retired a few years after, and from that time until 1847, when the furnace was shut down owing to scarcity of fuel and ore, the business was conducted in the name of J. Van Norman & Son. The enterprise seems to have been ably managed from first to last, and Mr. Van Norman made a fortune which he lost elsewhere.

It is extremely interesting to note that means were employed at the Normandale works for utilizing the waste gases of the furnace, in calcining the ore and heating the blast. The late G. R. Van Norman, Q.C., of Brantford, son of Joseph Van Norman, is quoted as follows:

It is not claimed that Mr. Van Norman was the original inventor of the hot-air blast which was patented by J. B. Neilson of Glasgow in 1828, but that he used and applied it without a knowledge of Neilson's invention. He invented an oven for the double purpose of heating the blast and roasting the ore. By constructing a set of brick ovens or chambers at the level of the charging door and connecting them with the shaft by pipes, Mr. Van Norman was enabled to roast the ore by utilizing the waste gas and heat of the furnace, the hot air blast of the furnace being fed at the same time through pipes connected with the roasting chamber.

Attempts at Marmora

In 1820 a blast furnace was built by a Mr. Hayes on the Crow river, township of Marmora, to treat the magnetic ores of Blairton on Crow lake. Little is known of this enterprise except that Mr. Hayes lost heavily, and the property passed into the hands of the Hon. Peter McGill of Montreal. In 1828 the Legislature was asked by Mr. McGill for a loan of £10,000 for aid in carrying on the works, and in 1831, upon the petition of Messrs. Hetherington, McGill and Manahan, an Act was passed to incorporate the Marmora Iron Foundry. Nothing came of the efforts to interest the Government in the company's affairs, and the business was carried on at a heavy loss.

Mr. Van Norman, after shutting down the Normandale furnace, purchased the Marmora works for $21,000, and in the fall of 1847 moved to Marmora, where, after spending much money on improvements and preparing a stock of ore and charcoal, he started the furnace in the summer of 1848.

This second venture of Mr. Van Norman proved a failure. The ore, being a hard magnetite, was not so easily reduced in the furnace as the soft bog ores of Norfolk county with which he was familiar, and consequently the amount of charcoal consumed per ton of iron made was beyond the profitable limit—"a sad disappointment." The iron, too, after it was made, had to be transported a distance of thirty-two miles to Belleville over a very rough road. A cheaper route was found later by a nine-mile road to Healey's falls on the Trent river, and thence by steamer to Rice lake, where the iron was transferred to wagons and carted twelve miles to the docks at Cobourg. The iron found a ready sale at $30 to $35 per ton until the St. Lawrence canals were opened and admitted foreign pig iron, which could be laid down in Belleville and Cobourg for $16 per ton. This circumstance was the death blow to the industry, and Mr. Van Norman was compelled to close his works at a heavy loss.

In 1856 an English company started operations in Marmora, and it is said sunk £75,000, which proved a total loss, the management not understanding the proper treatment of the ore. A few years later the furnace was again in blast under the superintendence of a Mr. Bently. A report of this venture is given in the Geological Survey report for 1866, and it is stated that the furnace worked well, the blast was heated, and the output averaged 5 tons daily from ore that yielded 56 per cent. of

Fig 7.—Staffordshire blast furnace, 1854.

Type of blast furnace common during the middle of last century (now obsolete).

iron, the consumption of charcoal being at the rate of 160 bushels per ton of iron made. However, financial difficulties put an end to the operations, and after a short campaign of forty days the furnace was blown out because funds were not available to pay the workmen.

Smelting with Wood at Madoc

In the village of Madoc in Hastings county another charcoal furnace was built in 1836 by Uriah Seymour of New York State. Considerable iron was made and the furnace was in blast for some time with varying success, until finally the supply of charcoal gave out and Mr. Seymour was forced to suspend operations. It is interesting to note that when charcoal became scarce cordwood was used as fuel, the wood being cut into two foot lengths. About one and a half cords were used per ton of ore

smelted. The cordwood answered very well as fuel as long as the output was kept at about one ton daily, but when atempts were made to drive faster, the wood descended too quickly and was insufficiently charred.

Van Norman's Experiment at Houghton

After Mr. Van Norman's failure at Marmora he returned to his old home at Normandale. The Great Western railway being under construction at that time, a demand was created for car wheel iron, and it was thought that the charcoal iron formerly made by Mr. Van Norman out of the bog ores of Norfolk county would meet the requisite specifications, especially those covering the chilling qualities. Accordingly, a blast furnace was erected in the township of Houghton in the western part of Norfolk, and was blown in during the year 1854. The first shipment of 400 tons of iron was made to Hamilton in 1855, but unfortunately the iron was found wanting in that particular chilling quality which it was supposed to possess, and instead of Mr. Van Norman getting his contract price of $45 per ton, he had to sell the iron for $22. This last venture of Mr. Van Norman cost him and his sons in the neighborhood of $32,000, and closed his career as Ontario's most successful pioneer iron master.

The next venture is hardly worth mentioning, as the works were never completed, and never produced any iron. The site chosen was on the Burnt river, in Haliburton county. An American firm, Messrs. Parry and Mills started in 1882 to build a blast furnace, charcoal kilns, saw mills, etc., but after expending about $60,000 they ran out of funds, and although every effort was made to borrow $10,000, no financial assistance could be secured, and the uncompleted works had to be abandoned a total loss.

Canadian Government Offers Aid

From this date until 1896 the production of pig iron in Ontario amounted to practically nothing. In 1883 the Dominion Government offered a bounty of $1.50 for every ton of pig iron produced in Canada from Canadian ores. This rate continued until 1886, when it fell to $1.00 a ton for the next three years. No stimulus was given to the industry by this bounty, and it was not until after the Hamilton Blast Furnace Company started operations in 1896 that the Dominion Government offered a second bounty system, Chapter 6 of 60-61 Victoria (1897), providing as follows:

$3.00 per ton on pig iron manufactured, on the proportion from Canadian ore.

$2.00 per ton on pig iron manufactured, on the proportion from foreign ore.

$3.00 per ton on steel ingots manufactured from ingredients of which not less than 50 per cent. of the weight thereof consists of pig iron made in Canada.

$3.00 per ton on puddled bars made from pig iron manufactured in Canada.

The period for payment of the bounty extended to April 1902, but Chapter 8 of 62-63 Victoria extended the bounty period to June 30th, 1907, and enacted a sliding scale of payments as follows:

Up to April 23, 1902, the rates fixed by the Act of 1897,

From 23 April, 1902, to June 30, 1903, 90 per cent. of the 1897 rate,
" 1 July, 1903, " June 30, 1904, 75 " " "
" 1 July, 1904, " June 30, 1905, 55 " " "
" 1 July, 1905, " June 30, 1906, 35 " " "
" 1 July, 1906, " June 30, 1907, 20 " " "

and it was further provided that no bounty should be paid on steel ingots made from puddled bars.

In April, 1907, the Dominion Government passed a third bounty Act, to remain in force until 1910. This Act makes special provision for the manufacture of iron and steel by electricity. The bounty rates are as follows:

1.—(*a*) In respect of pig iron manufactured from ore, on the proportion from Canadian ore, produced during the calendar year:

1907	$2.10 per ton.
1908	2.10 "
1909	1.70 "
1910	.90 "

(*b*) In respect of pig iron manufactured from ore on the proportion from foreign ore, produced during the calendar year:

1907	$1.10 per ton.
1908	1.10 "
1909	.70 "
1910	.40 "

(*c*) On puddled iron bars manufactured from pig iron made in Canada,

1907	$1.65 per ton.
1908	1.65 "
1909	1.05 "
1910	.60 "

(*d*) In respect of rolled round wire rods not over 3-8 of an inch in diameter manufactured in Canada from steel produced in Canada from ingredients of which not less than 50 per cent. of the weight thereof consists of pig iron made in Canada, when sold to wire manufacturers for use, or when used in making wire in their own factories in Canada, on such wire rods made after 31st of December, 1906, $6.00 per ton.

(*e*) In respect of steel manufactured from ingredients of which not less than 50 per cent. of the weight thereof consists of pig iron made in Canada during the calendar year:

1907	$1.65 per ton.
1908	1.65 "
1909	1.05 "
1910	.60 "

2. The Government in Council may authorize the payment out of the consolidated Revenue Fund of the following bounties on the undermentioned articles when manufactured in Canada for consumption therein, namely:

(*a*) On pig iron manufactured from Canadian ore by the process of electric smelting during the calendar year:

1909	$2.10 per ton.
1910	2.10 "
1911	1.70 "
1912	.90 "

(*b*) On steel manufactured by the electric process direct from Canadian ore, and on steel manufactured by electric process from pig iron smelted in Canada by electricity from Canadian ore during the calendar year:

1909	$1.65 per ton.
1910	1.65 "
1911	1.05 "
1912	.60 "

(*c*) Bounty as on pig iron under this section may be paid upon the molten iron from the ore which in the electric furnace enters into the manufacture of steel by the direct process, the weight of such iron to be ascertained from the weight of the steel so manufactured.

Also no bounty shall be paid on steel ingots from which steel blooms and billets for exportation from Canada are manufactured.

The following statement shows the quantities of Canadian and foreign ores used by smelting companies in Canada in the manufacture of pig iron during the nine

months ending 31st December, 1907, the quantities of pig iron made from each kind of ore and the amount of bounty paid thereon:

Company	Tons of Canadian ore used.	Tons of Foreign ore used.	Tons of Pig Iron made from Canadian ore.	Bounty paid on Canadian pig.	Tons of Pig Iron made from Foreign ore.	Bounty paid on Foreign pig.
				$		$
Dom. Iron & Steel Co., Ltd.	64.96	479,242.04	33.60	70.56	228,994.77	251,894.25
Hamilton Steel and Iron Co., Ltd.	45,753.80	69,222.66	26,436.24	55,516.09	35,613.71	39,175.07
N. S. Steel & Coal Co., Ltd.	1,269.00	83,885.90	458.00	961.80	42,995.11	47,294.62
Can. Iron Furnace Co. (Radnor)	10,180.95	1,891.32	4,603.21	9,666.74	1,051.85	1,157.04
do do (Midland)	3,689.73	28,770.94	1,852.05	3,889.33	15,374.72	16,912.18
John McDougall & Company	4,993.19	.....	1,924.87	4,042.27	.....	.....
Londonderry Iron & Min. Co., Ltd.	54,793.00	.....	14,596.39	30,652.42	.....	.....
Algoma Steel Co., Ltd.	31,203.07	166,633.79	17,336.01	36,405.63	87,210.12	95,931.14
Deseronto Iron Co., Ltd.	1,239.00	6,717.00	626.00	1,314.60	2,884.00	3,172.40
Atikokan Iron Co., Ltd.	14,444.63	.....	8,195.47	17,210.46	.....	.....
Totals	167,631.33	836,363.65	76,061.81	159,729.90	414,124.28	455,536.70

Ontario Government Bonuses Iron Mining

The Province of Ontario also instituted a bounty system, but preferred that it should be paid to the producers or miners of iron ore. In 1894, the Legislature by chapter 16 of 57 Victoria, set aside $125,000 as an iron Mining Fund, out of which there might be paid to producers or miners of iron ore in Ontario smelted in the Province a bounty at the rate of $1.00 per ton of the pig metal product of the ore. The period of this bounty was subsequently extended to January, 1906, but there was a limitation to the effect that not more than $25,000 should be paid out in any one year, and if the quantity of ore mined and smelted in any year exceeded the equivalent of 25,000 tons of pig iron, the bounty should be proportionately reduced. Special provision was also made in the Mines Act for payment of bounty out of the Fund on pig iron made by furnaces using charcoal or peat as fuel, such bounty to be at the rate of $1 per ton on the product of Ontario ores, and 50 cents on the product of ores not mined in Ontario, with the limitation that the following proportions of Ontario ores were to be used:

First two years not less than 20 per cent.
After two years " " 40 "
" four " " " 60 "
" six " " " 80 "
" eight " " " 100 "

The amounts paid out of the Iron Mining Fund of Ontario since its establishment have been as follows:

Year.	Pig Iron Made. Tons.	Bounty Paid. $
1896	4,000.00	4,000.00
1897	2,603.95	2,603.95
1898	8,647.19	8,647.19
1899	12,752.07	12,752.07
1900	6,737.80	6,737.80
1901	55,214.00	25,000.00
1902	53,868.22	25,000.00
1903	26,699.28	25,000.00
1904	50,715.17	15,236.19
Sundry expenses	.....	22.80
Totals	221,237.68	125,000.00

No provision having been made by the Legislature for the extension of the above bounty, the Iron Mining Fund is a thing of the past.

Reviving the Industry at Hamilton

The Hamilton blast furnace was blown in on December 31st, 1895, and marked the starting point for the manufacture of iron and steel in Ontario on a scale approaching modern requirements. The furnace had a rated capacity of 150 tons of iron daily, the fuel used being coke imported from the United States; hence this furnace was the first to manufacture coke iron in Ontario. The ores used at first came chiefly from the Lake Superior district, although a considerable amount of magnetite was smelted that was mined at Calabogie in Renfrew county, Ontario. When the Helen mine in Micipicoten started operations large quantities of this ore were shipped to Hamilton yearly, and up until the present time it forms a liberal share of the ore mixture at the Hamilton furnaces. The Company had its full share of troubles incidental to the establishment of a new industry, in a locality where furnace labor was hard to secure and the assembling of suitable raw materials difficult. Perseverance won, however, and after amalgamating with the Ontario Rolling Mills in 1899, the new organization, known as the Hamilton Steel and Iron Company, started on a successful career, and is to-day in a flourishing condition.

The system of bounties inaugurated by the Federal and Provincial Governments had the desired effect of stimulating the iron industry of the Province, and the years immediately following witnessed the building of new furnace plants in various parts of the Province. Strenuous efforts were put forward to utilize Ontario ores as far as possible, thus taking advantage of the liberal bounties offered. Iron mining took a new lease of life, and prospecting for iron ores became more general. Old mines were opened up along the Kingston and Pembroke and Central Ontario railways, and for a time ore was shipped in small quantities. Unfortunately the quality of the ore mined was poor. Much cobbing had to be done to get rid of sulphur and other deleterious elements, and as operations were carried on in a small half-hearted fashion, there could be but one result, and that was the abandoning of iron mining in that district. However, an important discovery of brown hematite ore was made in Michipicoten in 1899, which has since developed into the Helen mine, Ontario's largest producer of iron ore up to date. Blast furnace men were not slow to take advantage of the opportunities this new ore offered, and many thousand tons have been smelted in Ontario during the past six or seven years.

Charcoal Iron at Deseronto

The next furnace to get under way was that of the Deseronto Iron Company of Deseronto. This was a small charcoal furnace of about 50 tons capacity, built during 1898 and blown in January 25, 1899. Fuel was supplied by the Standard Chemical Company, whose kilns were but half a mile from the blast furnace. Lake ores were used principally, although some attempt was made to use the magnetite from Belmont in Hastings country. In late years the Standard Chemical Company found it increasingly difficult to secure wood at reasonable prices for manufacturing charcoal, and in October, 1906, the blast furnace had to blow out on account of not being able to obtain enough charcoal. After various repairs had been made, and the furnace bosh enlarged a foot in diameter, another campaign was started on 16th September, 1907, using coke as fuel, and since that date the furnace has worked continually.

Canada Iron Furnace Company at Midland

The Canada Iron Furnace Company, Limited, that had carried on a well established and prosperous business at Radnor Forges in the Province of Quebec, next entered the field in 1899, and erected a 125-ton blast furnace at Midland on the Georgian bay. The locality chosen was a particularly good one, for not only were freight rates on ore and coke about equally balanced, but the market was within easy distance by land and water.

The company's original intention was to manufacture charcoal iron in Midland, but cordwood lands in the vicinity took on so inflated a value that it was decided

to use coke as fuel, and the furnace has continued to use coke ever since. The ores smelted are a combination of Lake Superior and native ores. A large tonnage of Helen ore was used some years ago, but latterly the furnace product has been Bessemer iron, and Lake Superior ores are necessary for this class of pig. Magnetite from the Mineral Iron Range Mining Company at Bessemer, Ontario, is used to some extent and so far has given every satisfaction.

Works at Collingwood

In 1901 the Cramp Steel Company was organized, and intended to erect blast furnaces, open hearth furnaces, and rolling mills at Collingwood, Ontario. The open hearth and rolling mills were completed, but the blast furnaces were not built, and neither the open hearth department or rolling mill has ever seen hot steel. The company got into financial difficulties, and the future of the completed portion of the works is uncertain.

Blast Furnaces at Sault Ste Marie

Building operations on the plant of the Algoma Steel Company, Limited, were begun in 1901. This company is owned by the Lake Superior Corporation of Sault Ste. Marie, Ontario, and in March, 1902, the first steel rails made in Canada were rolled at the Sault works. The original plans of the company called for four blast furnaces of 200 tons daily capacity each, a charcoal manufacturing plant to supply the blast furnaces, two 5-ton Bessemer converters and a rail mill with a capacity of 225,000 tons annually. The Bessemer and rail mill departments were built first and until the company's own blast furnaces were completed, steel was made from pig iron bought in the open market. Much iron was shipped from Midland for this purpose. During 1903 the whole of the Algoma Steel Company's plant was idle on account of the financial paralysis which fell upon all the great industries of Sault Ste. Marie in that year. In the year 1905 No. 1 blast furnace was blown in with charcoal as fuel. In five or six months, however, the supply of charcoal was exhausted, and coke imported from the United States had to be substituted. No. 2 blast furnace was blown in during 1906, coke being used in this furnace also. No. 3 and No. 4 furnaces have not been built as yet.

The ores used are almost exclusively of Lake Superior origin, no Bessemer ore being mined in Ontario in sufficient quantities to meet requirements, although several small shipments have been received from the Wilbur mine at Wilbur, Ontario.

Atikokan Iron Company, Port Arthur

The latest addition to the blast furnace plants of the Province is that of the Atikokan Iron Company, Limited, situated at Port Arthur on the north shore of lake Superior. The building of this furnace was started in 1906, and on July 17th, 1907, it was blown in with due celebration. This plant is of particular interest in that it produces iron from Ontario ore only. The mines of the company are 130 miles west of Port Arthur on the Canadian Northern railway, where the company owns extensive mining lands on what is known as the Atikokan Iron Range. The run of mine ore is high in sulphur, and is accordingly roasted in a modern roasting plant, blast furnace gas being used as fuel. The company have built coke ovens and manufacture their own coke from West Virginia coal imported for that purpose. The furnace was in operation but a short time during 1907, the management deeming it advisable, owing to prevailing conditions, to go out of blast until the spring of 1908.

Steel Furnaces at Welland

Another company that deserves mention is The Ontario Iron and Steel Company of Welland, Ontario. This company have erected basic open hearth furnaces, rolling mills and also a small steel foundry. The foundry department only is in operation, but

it is expected that the open hearth and rolling mill will be running this spring. Pig iron will be bought in the open market, and this section of the plant when operated will turn out rails, bars, angles, skelp, etc.

The Electro Metals Company, Limited, is also located at Welland, and the plant, although small at present, is very efficient and well laid out. At the present time it is manufacturing ferro alloys, such as ferro-silicon, ferro-chrome, etc., power being supplied by one of the largest electric power companies on the Canadian side of Niagara Falls.

By the time this report is printed it is expected that the company will be manufacturing pig iron by the electric process, using an improved form of the Heroult furnace. This is the first company in Canada organized for the purpose of manufacturing pig iron and ferro alloys by the electric process on a commercial scale, and its development and progress will be watched with much interest, not only in Ontario but by the world at large.

In February of this year the town of Campbellford granted a free site and 10 years' exemption from taxation to a group of American promoters who have agreed to install a $60,000 rolling mill.

Conditions for the Industry in Ontario

That the Iron Industry is growing in importance throughout Ontario cannot be doubted. At the present time there are seven blast furnaces in the Province, and two at least of the existing companies contemplate extensive additions to their plants in the near future. A large blast furnace and steel making plant is spoken of for Toronto, which will need over 1,200 tons of ore daily. This project is backed by the parties operating the Moose Mountain mine, and if carried to completion the works will be the largest in Ontario of their kind.

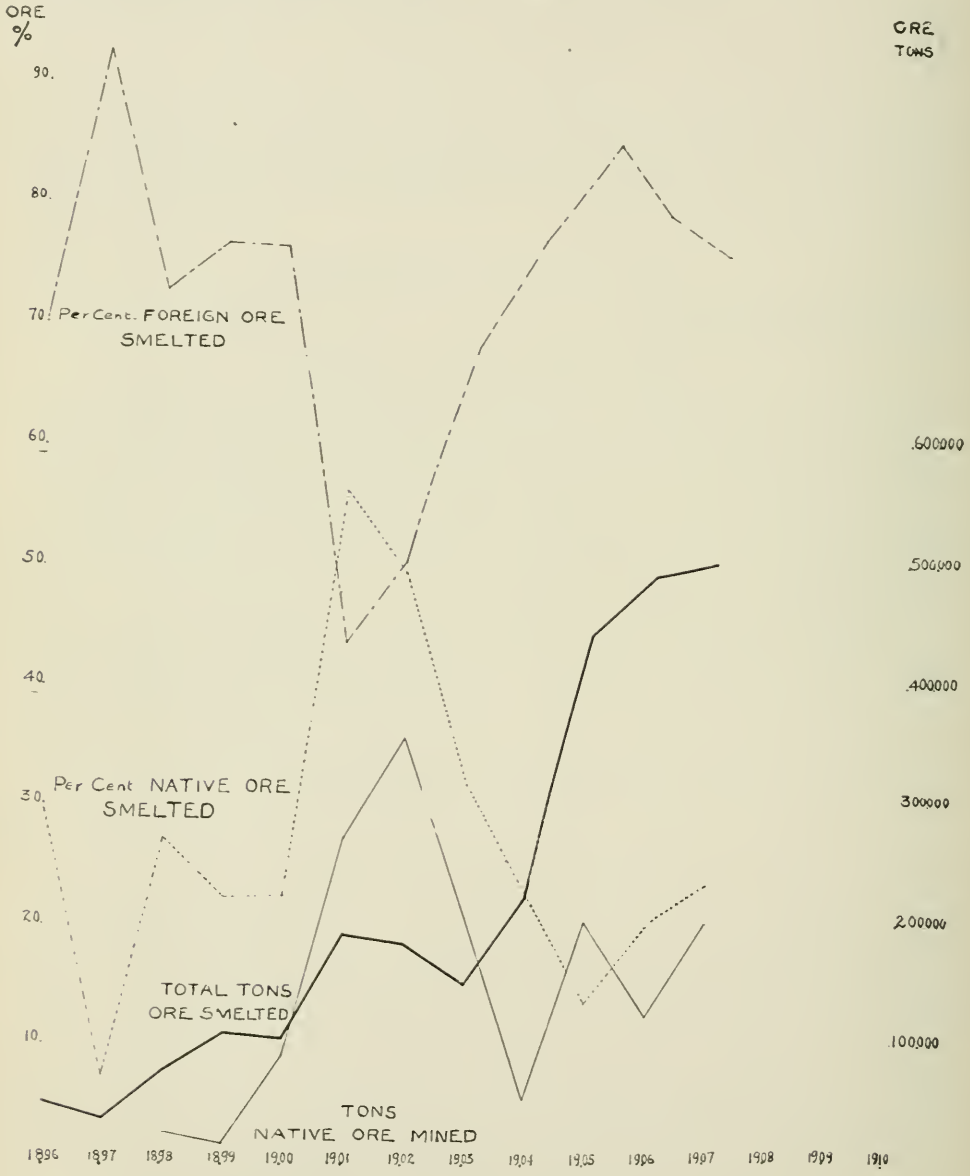
New deposits of valuable ore have recently been discovered, and it is within reason to suppose that other equally valuable finds will be made in the future. Millions of dollars have been expended in a systematic search for ore bodies upon all the older iron ranges of Lake Superior south of the international boundary. Nothing approaching this expenditure has ever been made in prospecting the iron formations of Ontario, and who knows what is contained in that vast and practically unexplored region between Lake Superior and Hudson Bay?

Unfortunately our greatest drawback in Ontario is lack of fuel. Charcoal has become too expensive except in remote districts, where the profits from cheap fuel would be swallowed up in transporting the iron to market. Of coal we have none, and must perforce either import coke or the coal for coke-making, from the United States. Under these conditions the building up of a flourishing iron industry presents some difficulties. At the 1907 Vienna meeting of The Iron and Steel Institute of Great Britain, Mr. Wilhelm Kestranck in a paper on the Austrian Iron Industry pointed out the natural influences that determine the growth of the iron industry of a country. He says:[1]

It can be taken as an axiom that the development of the iron industry of a country, in relation to the consumption, depends more on the richness of its fuel resources than on an abundance of iron ore. Thus it is seen that countries such as Sweden and Spain, which are rich in ore and poor in fuel, export the greater part of their ores to countries rich in fuel, and are in proportion to their wealth in ore, only small producers of pig iron. Other countries, on the other hand, such as Great Britain, which depends to a large measure on the importation of iron ores, and Germany—which has also to import considerable quantities of ore—occupy a leading position. It is unnecessary to mention the happy United States, which rejoices in the possession of abundance of ore and of coking coal, and for this reason naturally occupies the leading position.

[1]Vienna Meeting of the Iron and Steel Institute: Electrochemical and Metallurgical Industry for October, 1907.

This again leads to another problem, which is the location of an iron works in respect to its sources of supply of raw material and distance from the market that takes its product. Professor Smith of the University of Pennsylvania has written the following, and what he has said may be taken as distinctly applicable to North America and to our own Province of Ontario in particular.[2]



Graphic illustration of the Iron Industry of Ontario from 1896 to 1907.

In the making of iron it is usually necessary for the fuel or the ore to be transported to some common meeting place, and in the working out of the problem of transportation the location of the iron industry has usually responded to the motto that 'the ore goes to the fuel', an example of this being the great movement

[2]The Story of Iron and Steel, by J. Russell Smith, see p. 65.

of Lake Superior ores to the Pennsylvania coal fields. *But it is not, however, a maxim of absolute sway.* The question is rather complex, and is to be answered by weighing various freight factors involved in getting the ore and the fuel to the furnace and the finished product to the market. It is therefore a triangular problem, and it sometimes works out to the moving of the fuel rather than of the ore. Examples of this are afforded by the present industry on Lake Champlain and in Northern New Jersey. Here are ore fields of excellent character; in both fields iron is being made with coke from Western Pennsylvania. The reason they can afford to break the maxim and carry the fuel to the ore is found by noting the disposition of the finished product. It goes to New England and the East, and the fuel is therefore *moving toward the final market of the iron.* In the same way, in the Pittsburg region, the ore from Superior has practically been travelling towards its market, which was in Pittsburg and the cities of the East. Latterly there has arisen a new iron industry on Lake Superior near that ore field. This industry is of comparatively small extent, and although it uses eastern fuel it will doubtless grow, because the market will be found in the rapidly developing Northwest.

It would seem, therefore, from the foregoing, that Ontario, with her rapidly growing manufacturing industries of all descriptions, can profitably import coke or coal for use in her iron industries, because the fuel is travelling in the direction of a market that is contained within the Provincial borders, and also the growing market of the great Provinces to the West.

At the present time we import large quantities of iron and steel from the United States and Great Britain, not necessarily because the foreign iron and steel can be laid down in Ontario more cheaply than it can be manufactured here, but because the demand for this material far exceeds the native supply.

Imports of Iron and Steel into Canada

It is not possible to obtain statistics showing the amount of foreign iron and steel imported into Ontario annually, but the total tonnage imported by the Dominion is given, and it may safely be assumed that Ontario consumes fully 40 per cent. of this amount.

	1905.	1906	1907.	Totals
Iron and steel ingots, blooms, slabs, billets and puddled bars	317,829 $319,665	650,943 $663,794	383,003 $467,554	ewt. 1,351,775 weight. $ 1,451,013 value.
Steel rails	248,620 $5,533,523	49,065 $1,197,170	72,811 $1,867,865	tons 370,496 weight. $ 8,598,558 value.
Pig iron and cast scrap iron	84,506 $1,020,774	103,410 $1,455,071	165,591 $2,509,578	tons 353,507 weight. $ 4,985,423 value.

Production of Iron and Steel in Ontario

The following table shows the progress made by the pig iron and steel-making industry of Ontario since the revival of 1896, and also the proportions of native and imported ores respectively charged into the furnaces:

Year.	Ontario ore smelted, tons.	Foreign ore smelted, tons.	Limestone used, tons.	Coke used, tons.	Charcoal used, bushels.	Pig iron made, tons	Value pig iron. $	Steel made, tons.	Value steel made, $
1896	15,270	35,868	8,657	30,348	.....	28,302	353,780	.....	.....
1897	2,770	34,722	9,473	27,810	.....	24,011	288,128	.....	.....
1898	20,968	56,055	13,799	50,407	.....	48,253	530,789	.....	.....
1899	24,494	85,542	25,301	74,403	.....	64,749	808,157	.....	.....
1900	22,887	77,805	24,927	59,345	955,437	62,386	936,066	2,819	46,380
1901	109,109	85,401	51,452	113,119	915,789	116,370	1,701,703	14,471	347,280
1902	92,883	94,079	58,885	111,390	968,626	112,687	1,683,051	68,802	1,610,031
1903	48,092	103,137	49,426	96,540	933,620	87,004	1,491,696	15,229	304,580
1904	50,423	173,182	61,566	135,108	1,821,270	127,845	1,811,664	51,002	1,188,349
1905	61,960	383,459	121,052	262,415	3,387,869	256,704	3,909,527	138,387	3,321,884
1906	101,569	396,463	153,702	304,678	811,926	275,558	4,554,247	167,026	4,202,278
1907	120,156	388,727	171,037	326,937	1,849	286,216	4,716,857	170,632	4,168,137

II.—The Iron Ores of Ontario[3]

The mining of iron ore in Ontario has been and still is on a very small scale compared with the American side of Lake Superior, and any attempt to describe the iron ore industry of the Province must necessarily have in view the probable growth of this industry, rather than its achievements in the past.

Output Small Compared with U. S.

A comparison with the output from the great American mines may seem out of place, but it will serve to show the proportions to which mining operations in Ontario must grow if this Province is to take high rank in the production of iron and steel.

There are the same rock formations in northern Ontario as are found throughout the iron ranges of Michigan, Wisconsin and Minnesota, and they contain the iron series that are in many cases identical with those associated with the ore bodies of the American ranges.

Banded jaspers, magnetites and hematites occur for many hundred miles throughout northern Ontario, and when thoroughly and intelligently prospected will no doubt afford many valuable ore bodies. If the Americans are so far ahead of us in the production of iron ore, it is because they have spent more money in the exploration of one range alone than has been expended in exploring the whole of northern Ontario. The Americans, realizing this fact themselves, have of late years spent considerable sums of money prospecting the Ontario ranges. That success will attend their efforts is reasonably certain, and unless our ironmasters rise to the occasion and join in the search, they will be forced into the position of isolated buyers of native ores from American miners. At the same time we may be confident that the greater part of the output from these prospective mines will be exported to the United States and smelted in American furnaces.

Production of Iron Ore, Lake Superior Region

There is no other area in the world equal to the Lake Superior region as a producer of high grade iron ore. The only competitor is the minette region of Germany, France and Belgium, which is being rapidly left behind. The following table shows the great increase in production which has yearly taken place on the American side of Lake Superior.

1891	7,621,465	long tons.
1892	9,564,388	"
1893	6,594,620	"
1894	7,682,548	"
1895	10,268,978	"
1896	10,566,359	"
1897	12,205,522	"
1898	13,779,308	"
1899	17,802,955	"
1900	19,121,393	"
1901	20,593,537	"
1902	27,571,121	"
1903	24,281,575	"
1904	21,726,590	"
1905	34,241,498	"
1906	38,393,495	"
1907	41,817,385	"

But even the immense resources of the American side of Lake Superior will reach an end. The serious drain on this supply is well shown in the following quotation from Van Hise, one of the best authorities on Lake Superior iron mines:

[3]A good deal of the data contained in this section is from Mr. A. B. Willmott's paper on The Iron Ores of Ontario, read before the Canadian Mining Institute, Ottawa meeting, 1908, freely placed by Mr. Willmott at the writer's disposal. See Jour. C.M.I. Vol. XI.

The total product of the Lake Superior region since mining began in 1850 to 1899 inclusive is 171,418,984 long tons. The amount mined in the decade between 1891 and 1900 inclusive is 114,017,546 long tons, or 66.5 per cent., or nearly seven-tenths of the total amount mined. The product for the year 1900 surpasses that of any previous year, and is one-ninth of the aggregate of this and all preceding years. It is certain that the product of the current decade will far surpass that of the last decade.[1]

It is most striking that the production for 1907 is also one-ninth of the aggregate of this and all preceding years.

This season as a result of the investigation by the Tax Commissioner of Minnesota, it has been determined that the Minnesota deposits of ore approximate 1,170,000,000 tons. The total tonnage for the Lake Superior district of the United States, including undeveloped lands, amounts to about 2,000,000,000. This on the basis of last year's consumption will last fifty years, but as is shown in the preceding table, consumption is advancing with rapid strides. Already lower grade ores are being marketed than a few years ago was thought possible. In 1907 the standard for iron ore was reduced from 56.7 to 55 per cent. metallic contents, and this will undoubtedly continue as iron ore becomes scarcer. Moreover three-quarters of the ore reserves of Minnesota are in the hands of one company, and as the scarcity develops on the southern side, the search for ore among the iron formations in Ontario must correspondingly increase. Not only must part of the future demands of the United States be met from Ontario, but the Ontario demand itself must also be provided for. As shown in the accompanying table we only furnished last year 24 per cent. of the ore required for our Ontario furnaces. Indeed from 1901 and onward the proportion of Ontario ore used in our furnaces has steadily decreased.

Consumption of Iron Ore in Ontario 1896 to 1907

Year.	Foreign ore smelted, tons.	Foreign ore, per cent.	Native ore smelted, tons.	Native ore per cent.	Total ore smelted, tons.
1896	35,868	70.13	15,270	30.86	51,138
1897	34,722	92.62	2,770	7.38	37,492
1898	56,055	72.77	20,968	27.22	77,023
1899	85 642	77.74	24,498	22.25	110,040
1900	77,805	77.27	22,887	22.72	100.692
1901	85,401	43.89	109.109	56.09	194,510
1902	94,079	50.31	92,883	49.69	186,962
1903	103.137	68.19	48,092	31.81	151,229
1904	173,182	77.44	50,423	22.56	223,605
1905	383,459	86.10	61,960	13.90	445,419
1906	396,463	79.60	101,569	20.40	498,032
1907	388,727	76.30	120,156	23.60	508,883
Totals	1,914,440	Average, 73.80	670,585	Average, 26.20	2,585,011

Ores Mined in Ontario

In Ontario we have all the usual varieties of ores, hematite, limonite, and magnetite. But by far the largest production has been of hematite, namely about one and a half million tons.

Hematite

Hematite contains theoretically 70 per cent. iron. So far practically all the hematite produced has been from the Helen mine; considerable limonite is found intermixed, and the product of the mine would be strictly classed as brown hematite. The ores of the Frances and Josephine are hematites, but so far there has been no production. A slaty hematite occurs on the Williams property, a few miles north of Sault Ste. Marie. At Steep Rock west of Port Arthur, and at Loon Lake east of

[1]The Iron Ore Deposits of Lake Superior, p. 420.

Port Arthur, hematites have also been discovered. The specular variety occurs at Killarney, Algoma Mills, and Echo lake, also at the Stobie mine in Aberdeen township, from which a few small shipments have been made. Eastern Ontario has produced about 150,000 tons of hematite, chiefly from the Wallbridge, Dalhousie, and McNab properties, but all of these eastern deposits have proved to be small.

Magnetite

Of magnetite (theoretically, 72.4 per cent. iron), the Province has produced about 600,000 tons. Magnetite has been found in a dozen different localities in Eastern Ontario, and for the most part these ores with certain exceptions are high in iron, low in phosphorus and titanium, and high in sulphur. Along the Kingston and Pembroke railways several mines have been opened up and worked at various times, the chief producers being the Calabogie, Robertsville, Wilbur, and Glendower mines. The Wilbur is the only deposit worked at present. In the vicinity of the Central Ontario railway may be mentioned the Belmont, Blairton, Coe Hill, and the mines of the Mineral Range Iron Mining Company at Bessemer. The last mentioned are the only producers at present. The Radnor mine in Grattan township has been a steady producer in a small way for the past few years. In the northern part of the Province magnetites were mined last year, and will be shipped in increasing amounts. At Atikokan high sulphur ore is mined, and smelted in Port Arthur after preliminary roasting. Another promising deposit of magnetite a few miles west of Atikokan, has been explored and purchased by the United States Steel Corporation. This ore is said to run low in phosphorus and sulphur.

An extensive deposit of magnetite is being developed 25 miles north of Sudbury by Moose Mountain Limited; this property it is expected will soon make large shipments. Banded magnetites are found in the township of Boston, also in extensive ranges near Lake Nipigon and at Temagami.

Titaniferous magnetites have been found in many localities and in bodies of considerable size, such as at the Chaffey, and Matthews mines on the Rideau canal. Another deposit occurs at Gooderham, and at Chapleau there is a very large ore body containing about 10 per cent. of titanium. In Hastings county the Orton mine carries from 1 to 3 per cent. of titanium. As a general rule, titanium is absent in Ontario magnetites except where the ore occurs in connection with basic eruptives. It is perhaps a little premature to state that these titaniferous magnetites are a valuable asset, but the fact remains that ores containing titanium in considerable amounts have been smelted in the past, although this does not seem to be realized by furnacemen, and no doubt means will be found to utilize these ores in future years.

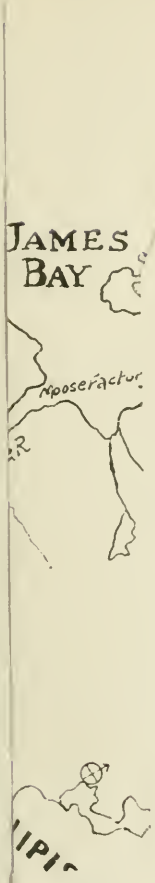
Bog ore

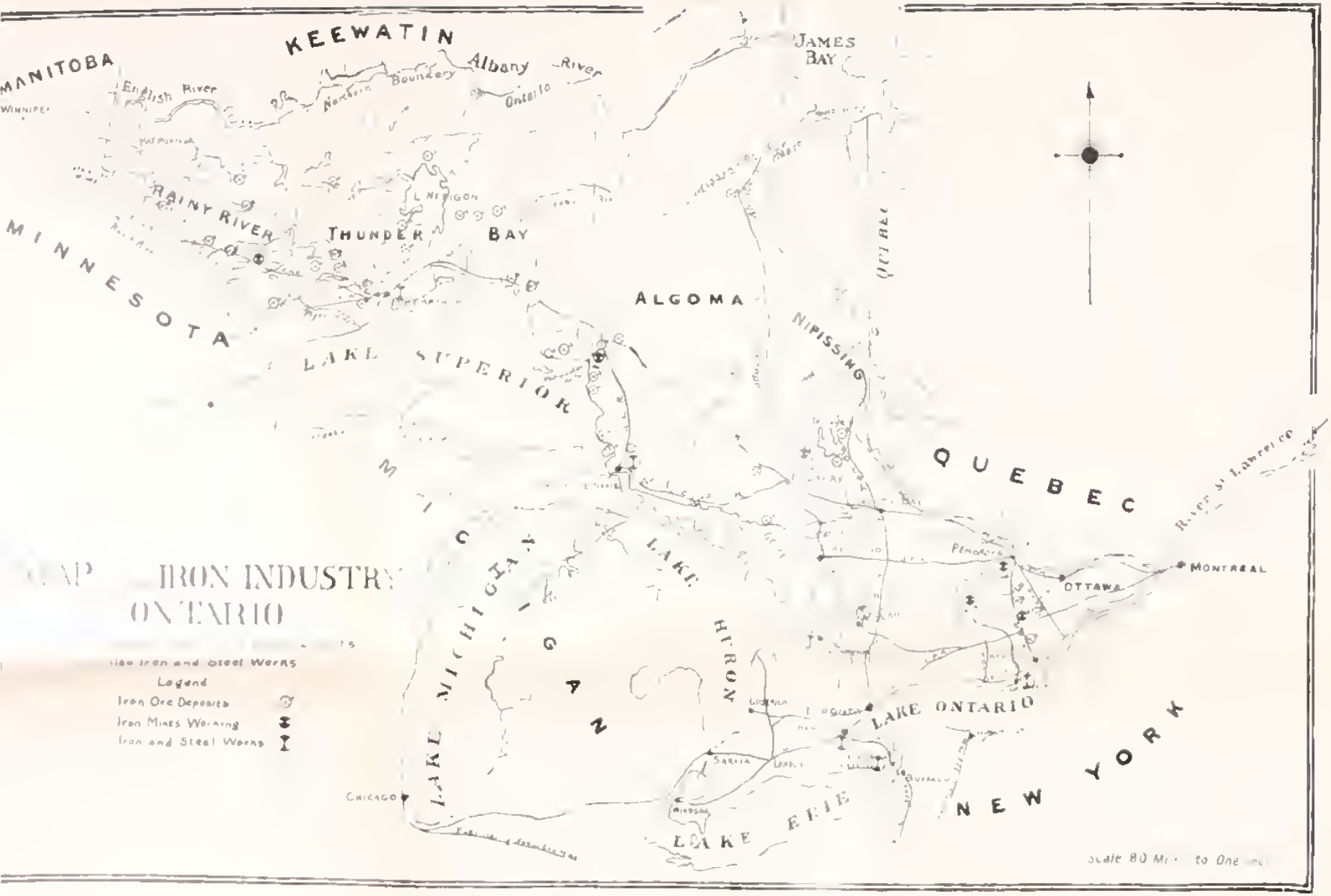
The bog or limonite ores of Norfolk county (theoretically, 59.8 per cent. iron), were smelted at various times in the first half of the last century, and similar ores from Oxford county have been smelted in small amounts at Hamilton. Ores of this class resulting from the oxidation of pyrites are found in western Michipicoten, and also at the Bannockburn pyrites mine. On the Mattagami and Moose rivers the oxidation of iron carbonates has resulted in bog ores running 48 to 57 per cent. in iron, about 1 per cent. in sulphur and from 0.1 to 0.2 per cent. in phosphorus.

Siderite

Siderite (theoretically, 48.2 per cent. iron) is found in Ontario in connection with numerous hematite deposits, notably on the hill at the back of the Helen mine, at the Josephine, at Steep Rock lake and at other points. At the Helen mine the siderite will average 34.94 per cent. iron with 7.7 per cent. insoluble, but in all cases is usually contaminated with sulphur in amounts varying between 1 and 2 per cent.

Legend
PLAT-ANIMIKIE
ANIMIKIE
LOWER HURONIAN
KEEWATIN
LAURENTIAN ERUPTIVES


JAMES
BAY


KEEWATIN
MANITOBA
JAMES BAY
Albany River
English River
Boundary
Ontario
RAINY RIVER
THUNDER BAY
L. NIPIGON
MINNESOTA
ALGOMA
NIPISSING
LAKE SUPERIOR
QUEBEC
LAKE MICHIGAN
LAKE HURON
LAKE ONTARIO
LAKE ERIE
NEW YORK
CHICAGO
OTTAWA
MONTREAL
IRON INDUSTRY
ONTARIO
Legend
Iron Ore Deposits
Iron Mines Working
Iron and Steel Works

Magnetic Sands

Iron sands have been and are being concentrated at many points in the Province by the waters of the great lakes. A deposit of these sands is found close to Peninsular Harbor on the north shore of Lake Superior, and on the north shore of Lake Erie these sands have accumulated and were smelted in the old Normandale furnaces nearly 100 years ago.

Geological Distribution of Ores

The geological formations occurring in Ontario, beginning at the most recent, may be classified as follows:—

Cenozoic	Recent.		
	Glacial.		
Paleozoic	Devonian.		
	Silurian.		
	Cambrian.		
Proterozoic (Pre-Cambrian)	Keweenawan or Nipigon		
	Huronian	Upper	
		Middle	
		Lower	Hastings.
	Laurentian (granite and gneiss)		Grenville.
	Keewatin (greenstone, etc.)		

In the Pleistocene (or, Recent and Glacial) we have only insignificant deposits of bog ores. In the Devonian there are some siderite deposits in the valley of the Moose river, of little commercial value. The Silurian is also barren of valuable ores. At the base of the Potsdam of the Cambrian there are some impure hematites found at Dog Lake north of Kingston, and at the base of the Keweenawan are found ocherous clays, but of no value commercially as iron ores.

The Animikie presents possibilities of finding valuable ores, and it is this formation which carries the Mesabi, Gogebic, and Menominee ranges on the American side of Lake Superior. It is found in Ontario in the triangular area bounded by Lake Superior, the United States boundary, and a line extending from Gun Flint Lake northeasterly to Thunder Bay. Indications of ore have been found at numerous points in this area, and at Loon Lake east of Port Arthur ore bodies have been developed. Near Sudbury is another Animikie area, but so far is not known to carry iron ores. These two areas represent the known extent of the Animikie in Ontario.

The Lower Huronian is widely distributed throughout Ontario, but so far little iron ore of commercial value has been discovered in this formation, although in Deroche township, north of Sault Ste. Marie, prospecting has met with fair success, and some specular hematite is found in Long and Rutherford townships. In Aberdeen township a more promising prospect is met with.

In the Keewatin the most promising of the iron deposits of Ontario are found. The formation is widely distributed, and in nearly every place where Keewatin or Huronian areas are marked on the geological maps, bands of iron formation have been discovered. Usually these bands are only a few hundred feet wide, almost always less than half a mile. Frequently there are a series of lenses in a row or arranged in parallel rows. At times the iron belt extends for many miles, being enclosed on either side by green schists.

The ores from the various producing mines on the American side are found in the Keewatin, Huronian and Animikie series. These formations occur in narrow

belts between the eruptive granites just as in Ontario, and the association of banded jasper with ore is characteristic on both sides of the lake.

In the following table the total production of the several ranges in the Lake Superior region is given:

Range.	Year Opened.	Tons Shipped.	Shipments Per Cent.
Marquette	1855	84,849,280	22.3
Menominee	1877	63,806,652	16.7
Gogebic	1884	54,023,478	14.2
Vermilion	1884	26,785,950	7.0
Mesabi	1892	150,198,054	39.4
Ontario	1900	1,361,000	0.4
		381,024,414	100.0

The Ontario production is made up mainly of shipments from the Helen mine on the Michipicoten range and the Atikokan mine in the District of Rainy river, both of which are in the Keewatin formation, as are also the mines in the Vermilion.

The mines of the Menominee, Gogebic and Mesabi are all in the Animikie, and most of the Marquette production comes from the Lower Huronian, although a portion of it lies at the base of the Animikie, practically at the contact with the Lower Huronian. Assuming that the whole of the Marquette production is from the Lower Huronian one finds that, of the total production of iron ore from around Lake Superior, 70.3 per cent. has been produced from the Animikie, 22.3 from the Lower Huronian, and 7.4 from the Keewatin.

Genesis of Iron Ores

To quote Mr. Willmott:

As previously stated, the majority of the Ontario ores occur in the Keewatin formation. At the base of this series is a mass of greenstone, frequently ellipsoidally parted, which is the oldest known rock of the Lake Superior area. Overlying this are various green schists, and towards the top of the series the Iron formation proper. This consists of ferruginous cherts, more or less banded with hematite and magnetite, iron carbonate and iron pyrites. Carbonated schists frequently border the Iron formation. Originally these belts seem to have been a chemical sediment, but are now found in nearly every case closely folded, and standing nearly vertical. Transverse folding has been a very common occurrence, and the anticlines have been frequently eroded until the formation has been cut off into lenses, varying from a few feet to a few miles in length. In most cases the width of the formation is a few hundred feet, and occasionally up to half a mile. Folded with the Iron formation there is usually a bed of green schists which form an impervious layer at the bottom of the basin. The American geologists who have closely studied the Vermilion and other south shore ranges, are of opinion that the ores associated with these ranges have resulted from descending waters concentrating the leaner ores from above, in the bottoms of these basins. Iron carbonate is supposed to have been the most frequent source of the ore, but both iron silicate and iron pyrites have also contributed. Probably in our Ontario ranges iron pyrites is a larger contributor than in the ranges to the south. In some few cases the original deposits in connection with the formation seem to have been rich enough to make an iron ore without further concentration. In other cases there are lean silicious magnetites up to 40 and 45 per cent. in iron, which can hardly be classed as commercial ore bodies, and which might well represent original deposits without secondary concentration. In these the silicious bands are absent, the silica being more evenly distributed through the whole mass. Another class of ore bodies includes those which are regularly banded, consisting of either hematite or magnetite alternating in narrow bands from one-eighth of an inch to 2 inches in width, with bands of quartz which may be white and gray chert, or red or black jaspers. It is with the more granular cherts that the hematite ore bodies so far discovered have been found.

Iron Ore Mining in Ontario

The production of iron ore in Ontario from 1898 to 1907 is shown in the following table:

Schedule	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
Ore Shipped .....tons	27,409	16,911	90,302	273,538	359,288	208,154	53,253	211,597	128,049	205,295
Value .....$	48,875	30,951	111,805	174,428	518,445	450,099	108,068	227,909	301,032	482,532

There are in Ontario six producing iron mines at the present time. Only one of these, however, the Helen, is worked on a large scale, and another promising large producer, Moose Mountain, has but recently commenced mining operations.

The Helen mine stands alone as our single producer of hematite. The other five are all mining magnetite, and so far the total production from the magnetite mines does not amount to one-half that obtained from the Helen. This fact is due in part to the character of the Helen ore deposit itself, which is a large body of high grade ore easily mined within reasonable cost, and partly because the magnetite ores with the exception of Moose Mountain, have usually been found in smaller ore bodies, generally contaminated with more or less deleterious matter, such as pyrites or gangue rock, which necessitates either sorting at the mine, or preliminary roasting before being smelted in the blast furnace.

With the opening up of Moose Mountain a change in the relative amounts of hematite and magnetite produced may be expected within the next few years. The cost of winning these magnetites will in most cases be higher than of the hematites, although certain exceptions may be cited where large bodies under favorable circumstances have permitted mining at a low cost. The magnetites of the Cornwall district in Pennsylvania are, it is stated, mined for 30 cents a ton. This is of course exceptional, and can only be accomplished with careful management aided by natural conditions.

Features of a Profitable Iron Mine

A deposit of iron ore to be worked at a profit should possess several essential features that are as a rule not required by the ore deposits of the higher priced metals. First, the ore should be reasonably pure, containing at least 50 per cent. of iron (with certain exceptions), and uncontaminated with injurious elements that would be prejudicial to its economical smelting in the blast furnace. Secondly, the deposit should be large enough to admit of economical mining, by removing the ore without handling any undue proportion of waste rock; and as the richest and purest ores are not worth more than $4 to $5 a ton delivered at the furnace, it can be seen that the amount of waste handled should be kept within narrow limits. Thirdly, there must be facilities for economically transporting the ore by rail or water, the length of transportation being governed by the freight rates, but so that the total cost of the ore at the furnace will allow the manufacturer a reasonable profit on the pig iron produced. And fourthly, the mine should be under careful and capable management, using modern methods of mining, and keeping the output at the highest possible point. All of the first three conditions may obtain, pointing to the successful operation of the deposit, and yet if the fourth is neglected, mining operations may result in failure and disaster.

Eastern Ontario has witnessed many attempts in mining the magnetites that are so abundant throughout that district, but as a general rule these mining ventures have not met with much success; in some cases because the deposits are either associated with sulphur, or are so intimately mixed with rock matter that the ore is undesirable from a furnaceman's point of view. In others, because the

owners or operators have failed to realize the fact that an iron mine to be successful must be managed with rigid economy and at the same time worked on a scale that will keep mining costs within reasonable limits.

Low Grade Deposits

In the mining of low grade deposits, where the ore must be sorted or hand-cobbed to separate gangue matter, it is impossible to keep the costs down to the same level as when mining high grade ores. But if in the case of low grade magnetites the ore is submitted to a preliminary treatment, such as magnetic concentration, and subsequently to briquetting or nodulizing, the problem of mining is much simplified. Sorting is avoided entirely, and the general run of mine as low as 30 per cent. in iron can be sent direct to the separating mill, provided always operations are conducted on a sufficiently large scale to enable mining costs to be kept at a low

Martell mine, near Calabogie, showing old head frame.

figure. For instance, it would not be profitable to concentrate a 30 per cent. ore that was costing $1.50 a ton to mine, because it would take 2.5 tons of crude ore costing $3.75 to make one ton of concentration at 60 per cent. iron, allowing for a probable loss of 10 per cent. of iron in the tailings. But if that ore can be mined and delivered to the mill for 75 cents a ton the process would have every chance of proving profitable.

There are numerous deposits in this eastern section of the Province that afford opportunities for concentration. On the Kingston & Pembroke railway the most notable are those of Calabogie, Robertsville and Glendower. These mines have all been operated at one time or other, but work has been abandoned for some years, owing to the fact that the ore was too high in sulphur, or contained too small a percentage of iron. Similar deposits are found in other localities along the railroad.

On the Central Ontario railway low grade deposits exist at Coe Hill, Belmont and Blairton. Large bodies of low grade ore are also found on the property of the Mineral Range Iron Mining Company five miles east of L'Amable station.

It is doubtful if any one of these deposits in its present undeveloped state could supply a large concentrating mill, but by erecting a plant in some favorable locality, where cheap hydro-electric power could be developed, and within reasonable distance of the mines, enough ore could be obtained by the combined outputs from several of the different deposits, to supply the separating mill with 1,000 tons daily. A mill with much less capacity than this would not be found economical, because the process of magnetic separation is expensive when compared with the value of the concentrated product.

The Producing Iron Mines of Ontario

Following is a brief account of the iron mines at present in operation in the Province, beginning with the west, and proceeding to the east.

The Atikokan Mine

The Atikokan iron deposits were discovered in 1882 by an Indian trapper who informed his employer of the find. The latter in turn interested Messrs. McKellar Bros. of Fort William, who applied for and acquired from the Government what is now known as Locations E 10 and 11.

In 1905, the property was acquired by the Atikokan Iron Company, with William Mackenzie president, and J. C. Hunter of Duluth vice-president and general manager. An agreement was entered into with the town of Port Arthur whereby the company agreed to put up a roasting plant and blast furnace in Port Arthur, in return for certain concessions from the town in the way of site and cash bonus.

The mine is situated 128 miles west of Port Arthur on the Canadian Northern railway. A spur line three miles long connecting the mine with the main railroad has been built, making a total rail haul of 131 miles from the mine to the furnace.

The ore occurs in a ridge of chlorite-schist[5] striking E and W across the swamp for a distance of 4,000 feet. The ridge will average 100 feet high and is 280 feet wide at its base. Parallel bodies of magnetite standing almost vertical follow this ridge along its longer axis, and can be traced on the surface throughout its length.

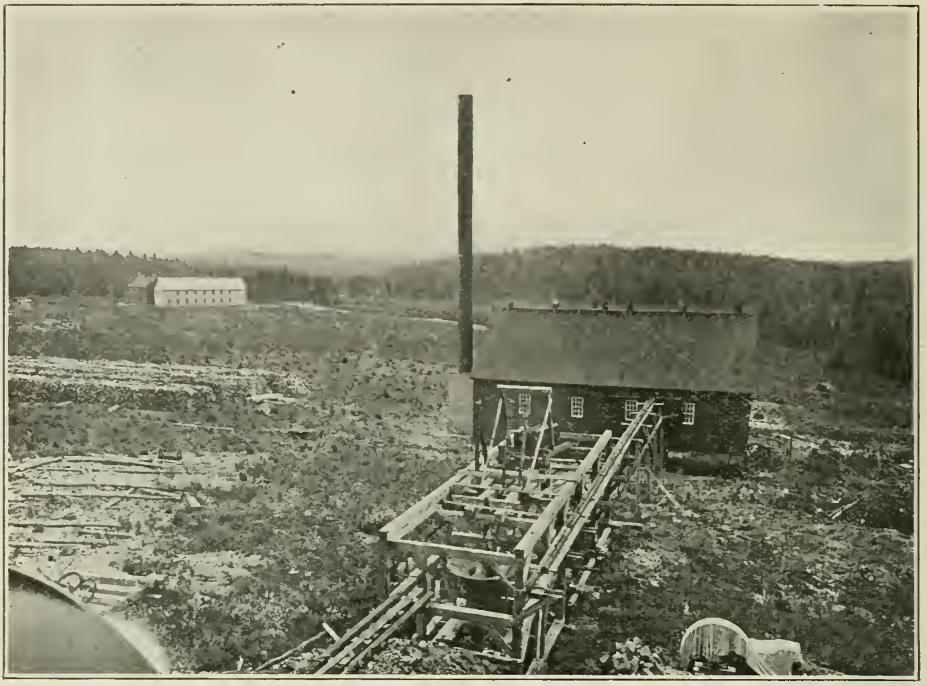
The ore is partly fine and partly coarse grained magnetite, running 60 per cent. in metallic iron. It contains pyrrhotite and pyrite to such an extent that the run of mine will average 2.5 per cent. in sulphur, and hence must be roasted before smelting in the blast furnace. Phosphorus is contained to the amount of 0.162 per cent., which places the ore on the non-bessemer list.

The accompanying sketch shows the relative position of the ore bodies, and gives some idea of the extent of mining operations.

At the base of the hill a tunnel 6 feet wide has been driven clear through to the other side, cutting ore at A. 40 feet wide, ore at B. 10 feet wide and ore at C. 16 feet wide. The width of this tunnel was afterwards increased to 12 feet, from the 40-foot ore body to the tunnel mouth.

Deposit A. is the only one being worked at present. It has been stoped out to a height of 20 feet, and driven 85 feet to the east and 65 feet to the west. Upraises have been started at both ends; that at the west end is up 50 feet. The intention is to continue this raise through to the surface, and then work back towards the tunnel, understoping the ore. At the east end, the raise is within a few feet of a surface open cut; this will be broken through, and the ore then worked out from both sides. No timbering is required in the stopes, as the ground is very hard and requires no holding.

[5] Bur. Min. Rep. Vol. XII, (1903), p. 306.



Atikokan iron mine; power house, crushing and loading machinery. Boarding houses in distance.

Atikokan iron mine; power house, store house, dry and smithy.

Deposits B. and C. are both smaller than A.; and the ores not so massive, having more of a schistose structure, but on analysis they prove to be lower in sulphur and higher in lime than A.

Several bore holes have been put down at different times to prove the property, and considerable ore is said to have been struck in most of them. Five of these holes were put down on the south side of the ridge, three at an angle of 45 degrees and two horizontal. One angle hole was drilled from the north side of the ridge.

The ore is trammed out of the tunnel in 1½ ton cars, and fed to a No. 6 Austin gyratory crusher, capacity 50 tons per hour, which delivers to an 18-inch belt elevator, conveying the ore in 12 x 18-inch buckets and elevating to 30 feet, where it is dumped direct into 50-ton drop bottom steel cars. No storage pockets are used, but a string of empty cars are kept spotted on the mine siding and allowed to run by gravity down to the elevator as required. With this equipment 200 tons of ore are shipped per day of ten hours.

Analysis of the run of mine ore is said to be as follows:—

Fe.	SiO_2	Al_2O_3	P	Mn	CaO	MgO	S.
62.14	7.64	0.75	0.12	0.09	2.54	2.18	1.-4

Power for the crusher and elevator is supplied by a 50-h.p. Jenckes engine situated in the crusher building.

The main engine room 40 x 70 feet contains three 100-h.p. return tubular boilers, the high pressure half of a Canadian Rand Air compressor, class B. 3, supplying 2,670 cubic feet of free air per minute at 80 lbs. pressure, steam pressure at 125 lbs.; the foundation for the low pressure side of the compressor is in place. A 750-h.p. Wainright heater and a Fairbanks boiler feed pump complete the equipment; water suction is direct from the Atikokan river 200 feet away. It is the intention to install a 150-light electric plant at an early date.

Other mine buildings are a dry house and blacksmith shop each 20 x 40 feet, two large commodious frame buildings 60 x 27 feet, used for boarding and bunk houses for the staff and miners. These will accommodate 100 men easily, but not more than 65 men have been employed at any one time to date.

At the time of my visit the mine was shut down owing to the fact that the furnace in Port Arthur was out of blast. Mining operations are likely to be resumed in the spring of 1908 and will probably be carried on on a more extensive scale.

The superintendent of the mine is Mr. F. Rodda, to whom thanks are due for courtesies received during my visit.

The Helen mine

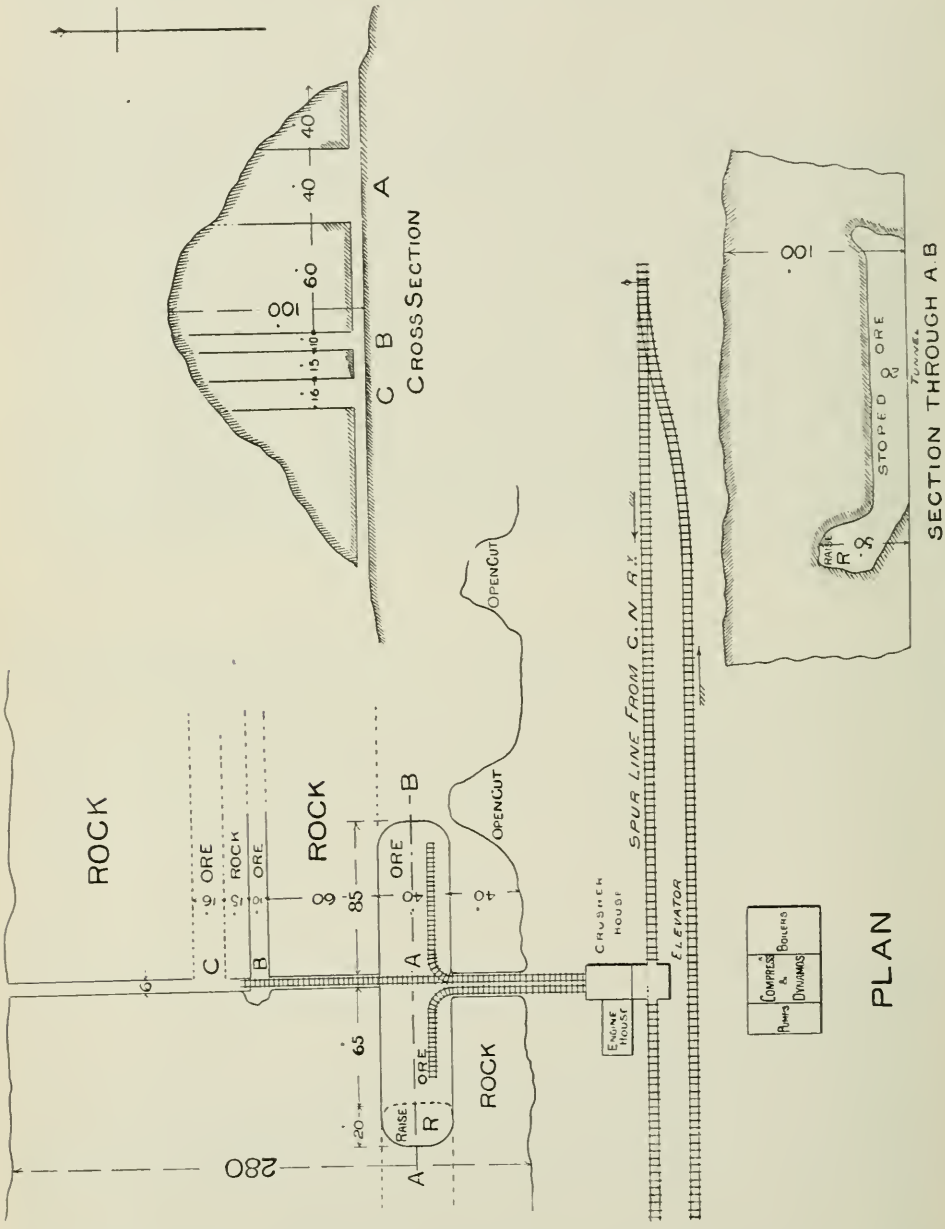
The Helen mine in the Michipicoten district is the largest single producer of iron ore in Ontario to date. Controlled and operated by the Lake Superior Corporation, this deposit has been developed along lines comparable with the large iron mines of Michigan and Minnesota, and is producing ore at the rate of 1,000 tons daily.

The mine, situated 12 miles from Michipicoten Harbor, is connected with that shipping point by a branch line of the Algoma Central and Hudson Bay railway. The ore is shipped from the mine in 50-ton steel ore cars and delivered to the dock pockets, from which it can be chuted into the holds of vessels alongside, at the rate of 800 tons per hour. There is 24 feet of water at the docks, so that the largest ore freighters can be loaded. During the closed season of navigation the ore is stocked at the mine.

Helen ore is a mixture of hematite and limonite, and according to Mr. R. W. Seelye[6] may be described as follows: First grade, hard compact red hematite, 60 per cent. iron and over, the second, porous but hard brown limonite, 57 to 58 per cent. iron, the third, soft brown limonite, 53 to 54 per cent. iron. The ore contains too much phosphorus to be classed as Bessemer, but sulphur is within reasonable limits, despite

[6]Bur. Min. Rep., Vol. 14 (1905), p. 60

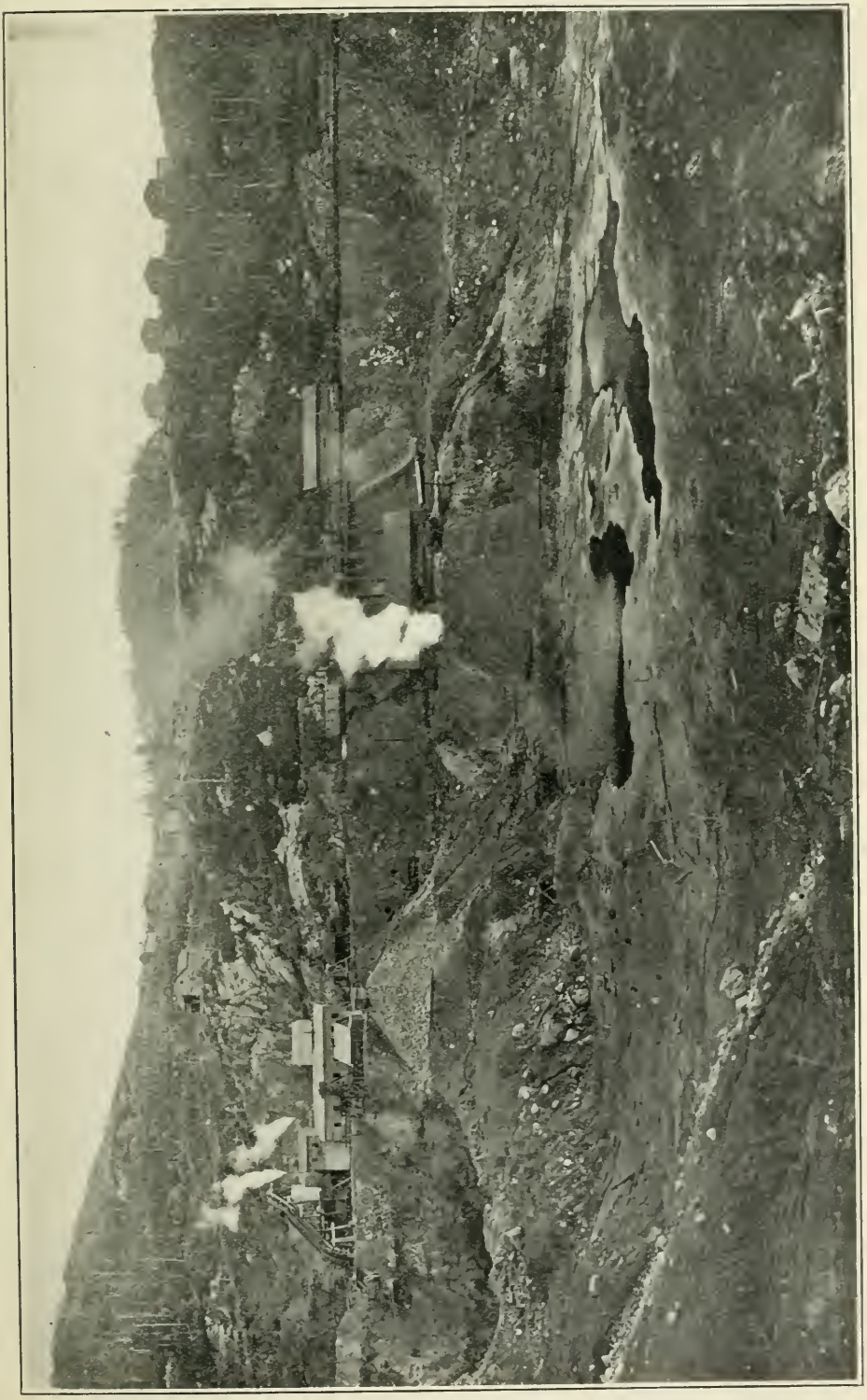
the fact that much nodular pyrites is found throughout the deposits, although from the character of its occurrence it can easily be avoided. Iron pyrites is found in considerable quantities under the old bed of Boyer lake, and several shipments have been made to the Company's sulphite works at Sault Ste. Marie.



Sketch plan of Atikokan iron mine.

The following analysis of Helen ore was obtained from the Hamilton Steel and Iron Company, and is representative of the stock piles of this ore at the blast furnaces.

Fe.	SiO_2	Al_2O_3	P	Mn	CaO	MgO	S	Moisture.
57.10	5.27	1.04	0.128	0.038	0.20	0.10	0.053	3.44



Helen iron mine, 1906, showing the original bed of Boyer lake.

From a blast furnaceman's point of view the ore is an ideal one for manufacturing foundry iron. The proportion of lump ore to fines is high enough to prevent undue waste in flue dust, and the physical character of the ore is such that it admits of easy and rapid reduction. If it were not for the presence of phosphorus in amount exceeding the Bessemer limit, the ore would be classed with the best of the Lake Superior Bessemer ores.

The iron formation[7] at the Helen mine has a total length of one and three-quarter miles and is over nine hundred feet wide, consisting for the most part of ferruginous cherts, banded cherts and iron ore, and cherty siderites, containing the iron ores proper, hematite and limonite, also considerable pyrite. This formation striking nearly east and west, lies in Wawa tuffs belonging mainly to the Lower Huronian. These rocks consist of greenish or brownish schists containing much silica and sericite as well as carbonate in some cases. The "Gros Cap" greenstones outcrop along the margin of the Iron formation. These rocks, according to Van Hise, are the oldest in the Lake Superior region. The ore body itself lies at the eastern end of Boyer lake, and is surrounded on the three sides by steep and high hills and on the west by Boyer lake. This was originally a pond about one-quarter of a mile long and hardly as wide, with a depth of 133 feet, but has been pumped out to permit of mining under the lake bed.

The highest point at which ore is found is 100 feet above the lake, and as drill holes have proved the ore to a depth of 188 feet below the original surface of the water, the total thickness of the deposit is in the neighborhood of 288 feet.

From the edge of Boyer lake the ore body extends eastward for 1,400 feet with an average width of 400 feet, and it is this main deposit which has been worked so extensively the past few years.

During the early years of development the mine was worked in open cut benches, breaking down the ore by heavy blasts and loading with steam shovel. A Lidgerwood cableway was also erected over the ore body, and handled that portion which was inaccessible to the steam shovel. This system of mining was replaced later on by underground development, and at the present time all ore is mined from beneath the surface.

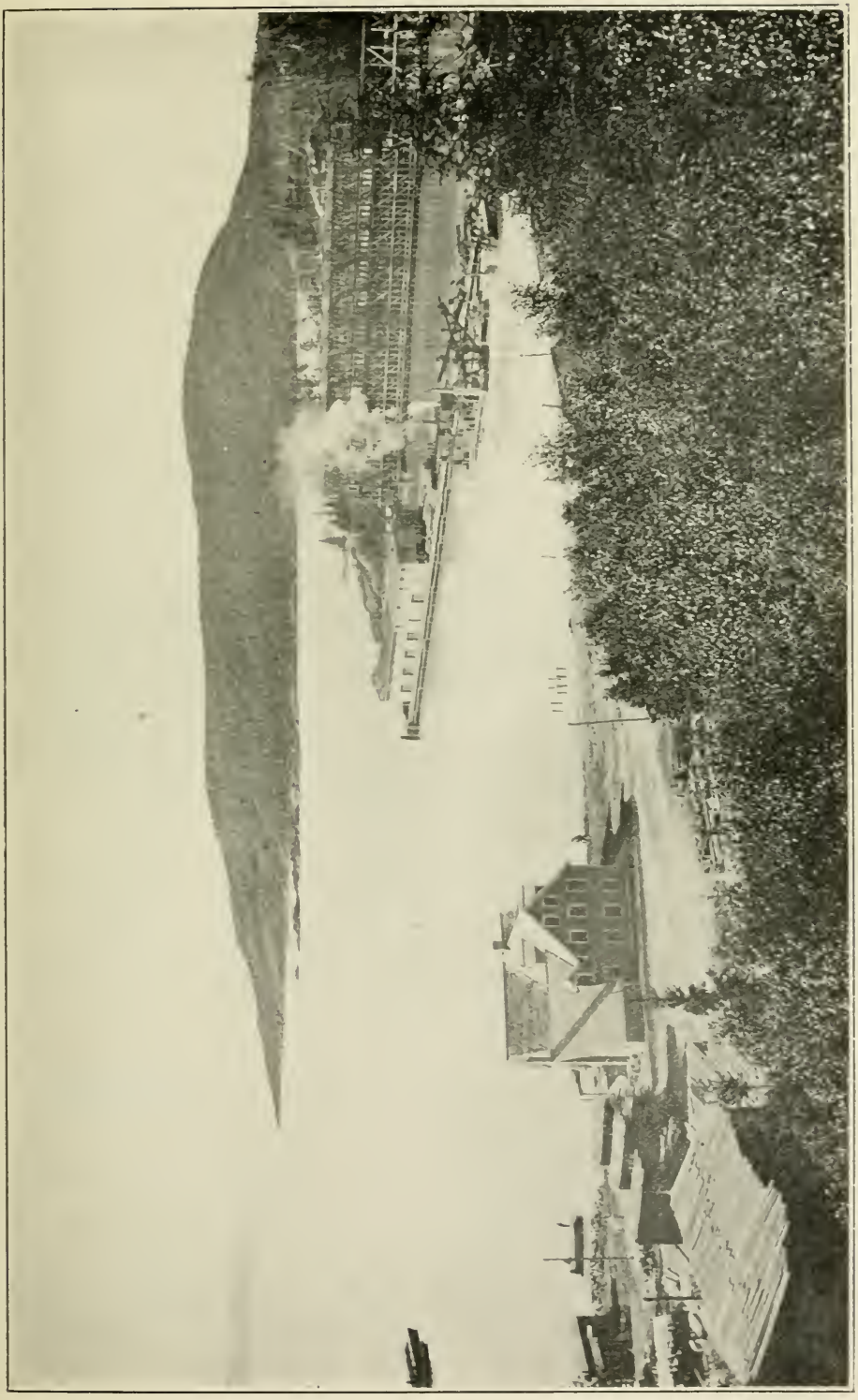
Two vertical shafts[8] have been sunk 100 feet apart in the greenstone along the southern edge of the ore body. No. 1 is a double compartment shaft with cage, pipeway, and ladderway, and is used as a man entry, also to convey timber and other supplies below the surface and for the hoisting of waste rock. No. 2 is a double compartment shaft also, and is used entirely for hoisting ore. Both shafts are about 300 feet deep, and are connected at the bottom by a drift 100 feet long.

From the bottom of No. 2 shaft a cross-cut 11 feet wide is driven 150 feet to the ore body and continued through the deposit to the northern boundary of merchantable ore, a distance of 250 feet. From the point where this cross-cut meets the ore a main drift has been driven 500 feet, following the ore to its eastern boundary, and from this main drift auxiliary cross-cut levels approximately northeast and southwest are made every 50 feet, running to the boundaries in each case. Upraises are made in these cross-cuts every 40 feet, and are driven to within 20 feet of the levels above, chutes are put in at the bottom of each upraise, and the ore is broken down by overhand stoping connecting adjacent upraises as the ore is removed. The stopes are not more than 60 feet high, and are worked out from the boundaries of the ore body, back towards the main tramway drift.

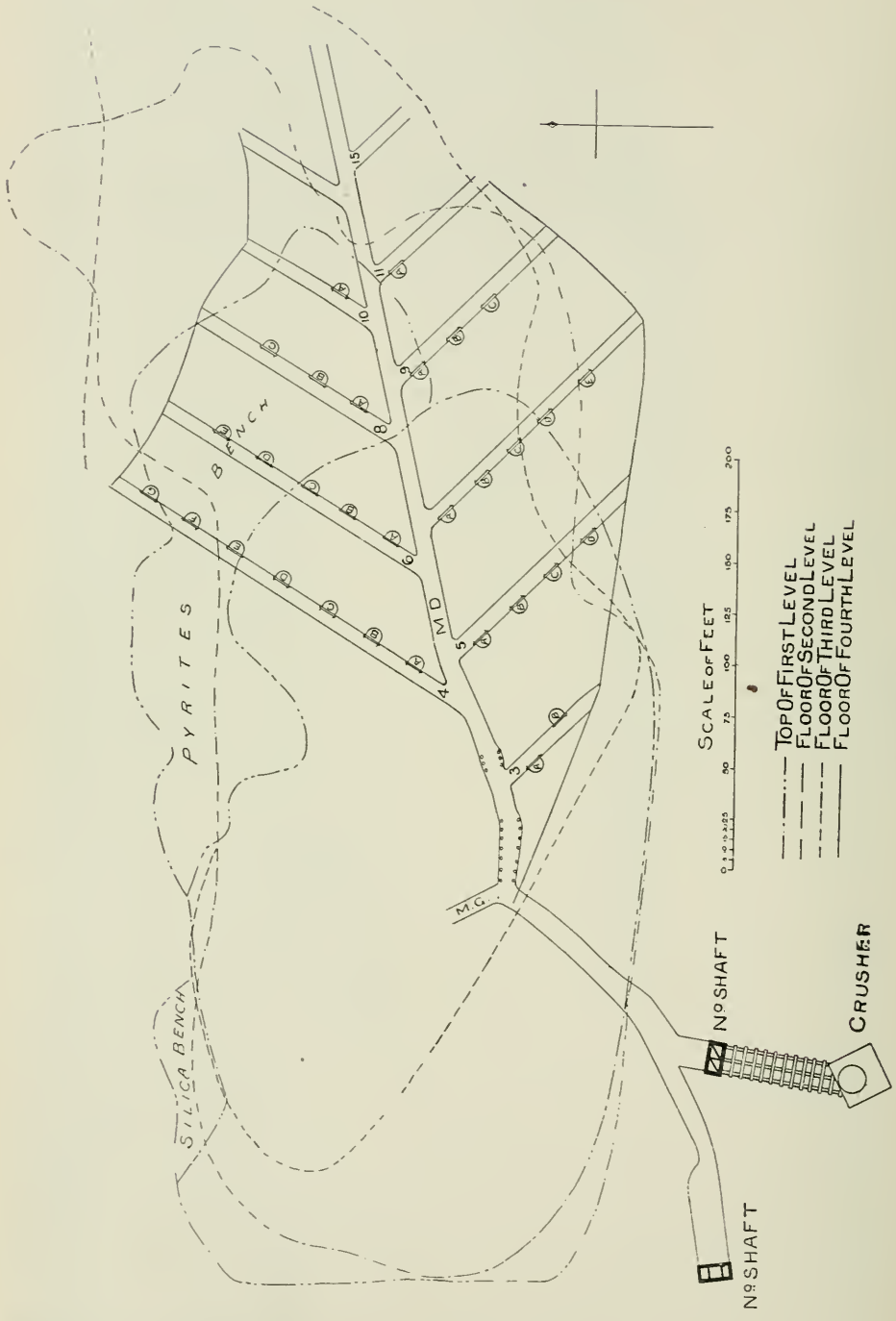
The lake pump is used to pump out Boyer lake adjoining the mine workings, thus keeping the water from running through to the mine workings and making it necessary to pump the water to the surface. This pump is a single cylinder Cameron 16x16x18 inch having a 10-inch suction and 8-inch delivery pipe. The pump raises 470 gallons of water per minute against a head of 75 feet.

[7] The Michipicoten Iron Region, by A. P. Coleman and A. B. Willmott, Bur. Min. Rep. Vol. 11 (1902), p. 152 *et seq*

[8] Bur. Min. Rep., Vol. 16 (1907), p. 72.



Michipicoten Harbor, 1906, showing docks from which Helen ore is shipped.



Plan of Helen iron mine.

The underground workings are kept free from water by means of pumps placed on the second, third and fourth levels. There are six pumps used for this and a seventh used for shaft sinking.

The ore is raised by a double 5-foot drum hoist of 2,000 tons daily capacity, and is dumped direct from the 4-ton Kimberley skips to a No. 8 Gates style D gyratory crusher which can handle 2,500 tons per day, crushing to six inches. It is then shipped to Michipicoten Harbor.

The power house contains two Ingersoll-Sargent single stage air compressors of 12 and 5-drill capacity respectively, and five large horizontal boilers of the fire tube type, 640 horse power combined, supplying steam for the whole plant. A feature of the plant is the absence of feed pumps, the water being fed to the boilers at a pressure of 140 pounds, caused by the difference in elevation between the boiler plant and the lake where the water is obtained.

During nearly the whole of 1903 the mine was shut down, consequent upon the financial difficulties which beset the Lake Superior Corporation in that year, and in the summer of 1906 another shut down of two months was caused by fire destroying the shaft house, power plant, crusher house and other buildings. Since that time the mine has been producing steadily, and has yielded from 1899 to 1907 over one and one-third million tons of merchantable ore.

Moose Mountain, Limited

Moose Mountain is situated about 25 miles north of Sudbury in the township of Hutton. The Company control 4,600 acres of mining lands, all in Hutton, and up to date have proved the existence of several large bodies of iron ore, chiefly magnetite with a little hematite. The accompanying sketch map of Hutton township shows the extent of the company's property, and the location of the various ore bodies.

The ore occurs in the Keewatin rocks,[9] consisting mostly of greenstones, the oldest series of rocks known in this part of the continent. The ore is a very fine grained magnetite, hard and crystalline, but easy to crush, and according to the proportion of silicious or amphibolitic material which it contains, will vary from lean to high grade.

No. 1 deposit is approximately 500 feet long and 150 feet wide. It has been proved to some extent by two drill holes 257 and 400 feet in length, run at angles of 45 and 60 degrees respectively. This is the only deposit worked at present. No. 2, traced for over two miles in length and about 40 feet wide, consists of lean ore, the magnetite being interbanded with silicious material. The ore is too low in iron for blast furnace use, but it offers an interesting problem in magnetic concentration. Another outcrop of silicious ore occurs in the northwest corner of the property. No. 3 and No. 4 are bodies of high grade ore, not as yet proved to be as large as No. 1, but the ore is quite as good.

Actual mining operations have been confined to No. 1, the original Moose Mountain deposit. The surface of the ore body is 210 feet horizontally from, and 140 feet vertically above, the railroad track. The ore is won by overhand stoping from an open cut 65 feet high, trammed out and dumped on a large 30-degree chute, which delivers to a No. 8 Austin gyratory crusher, reducing the ore to 6-inch size. The ore then passes through a 48x12-inch trommel with quarter-inch perforations: the undersize going direct to the elevator pit, while the oversize is fed to a No. 5 Austin crusher, discharging into the elevator pit. The belt elevator conveys the ore in 14x30-inch buckets to the storage bin of 250 tons capacity, where it is loaded into railroad cars.

The power plant at present consists of a 16x42-inch Jenckes Corliss engine, steam being supplied by two 150-h.p. return tubular boilers. An air compressor will be installed shortly; at present the machine drills are operated by steam.

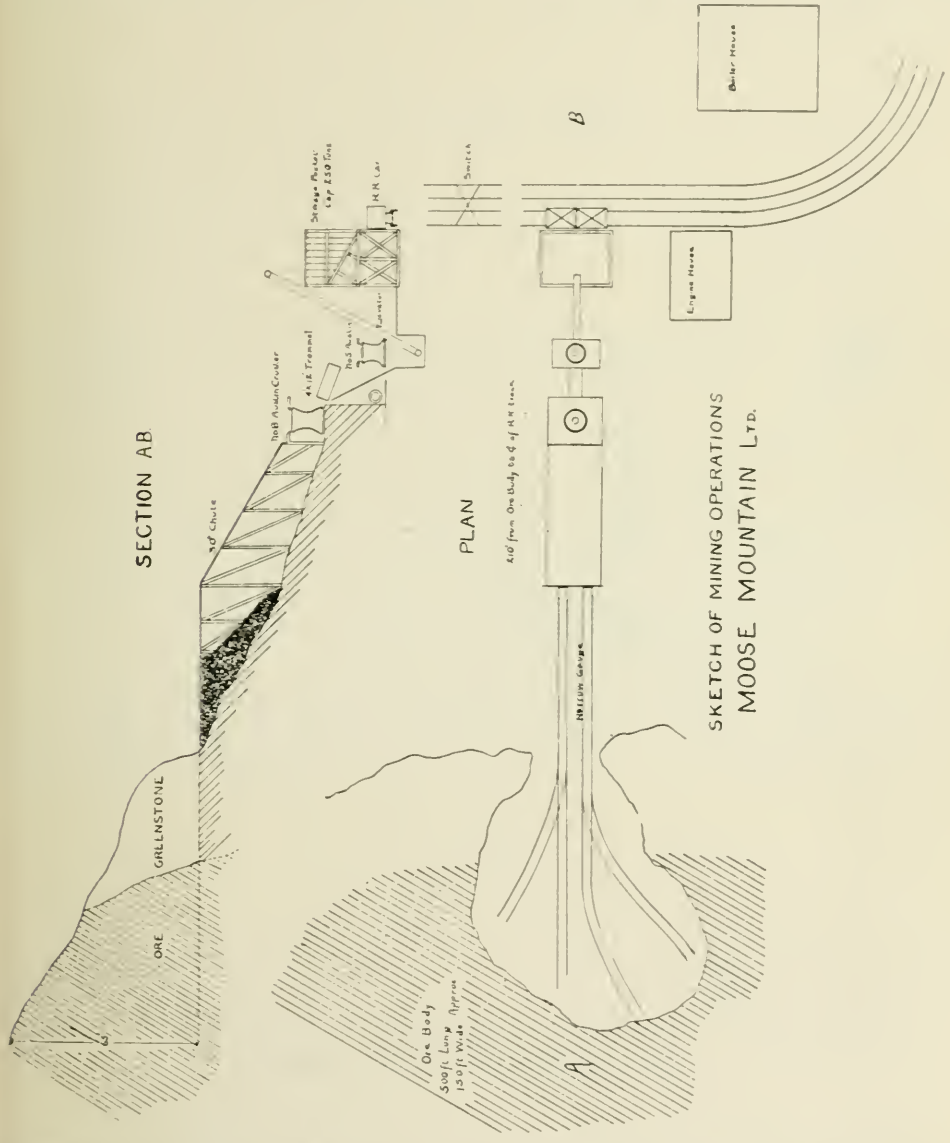
[9]W. G. Miller in Bur. Min. Rep., Vol. 16 (1907), p. 73.

Moose Mountain. American Institute of Mining Engineers inspecting ore body at the open cut.

Moose Mountain mine. View from top of Moose Mountain.

It is expected that a considerable tonnage of this ore will be smelted in Ontario furnaces, but no doubt large shipments will be made to American ports, despite the import duty of 40 cents per ton. The guaranteed analysis of the ore is as follows:—

Fe	SiO_2	Al_2O_3	P	Mn	CaO	MgO	S	Moisture
55.50	13.29	1.21	0.10	.02	3.60	3.15	0.011	1.00

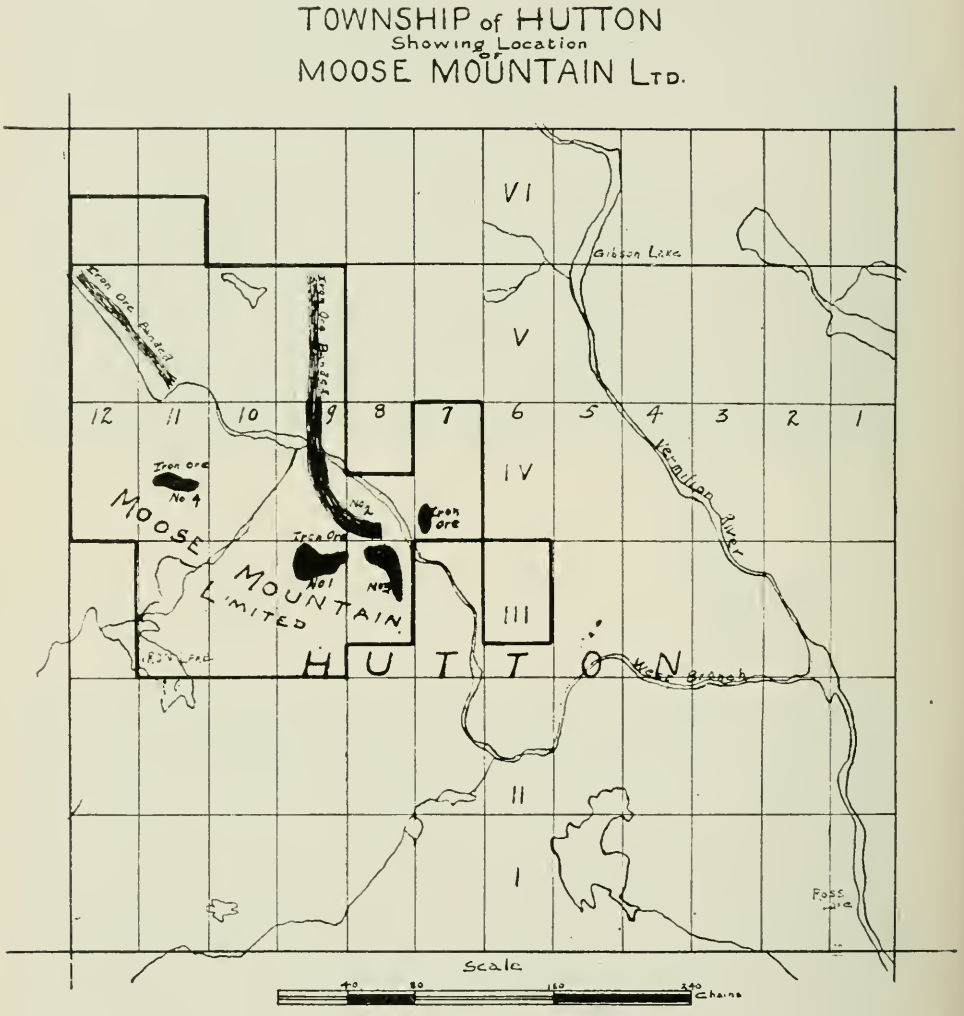


The ore will be shipped to Key Harbor on the Georgian Bay via the Canadian Northern railway. The Toronto to Sudbury portion of this line is completed now, and affords a rail haul of 80 miles only from the mine to the docks.

The docks at Key Harbor[10] are of original design, and unlike any on the great lakes for handling iron ore. The ore, arriving from the mines in drop bottom steel cars, is dumped from a trestle to a stock pile beneath. Under this stock pile, and in

[10]The Moose Mountain Ore Range, by N. L. Leach, Sudbury; Journal of the Canadian Mining Institute, Vol. xi

line with the centre line of the trestle, is a tunnel through which a 42-inch belt will convey the ore to a similar belt at the water's edge, which in turn conveys the ore to the dock trestle, sixty feet above the water's level. It is then the belt, weighed by an automatic device and dumped into pockets, from which it will be spouted into the hold of the vessels alongside the dock. It is expected that these belts will have a capacity of eight hundred tons of ore per hour.



The Key affords a splendid natural harbor, with 24 feet of water alongside the docks, more than enough to float the largest lake ore freighters. This shipping point is 500 miles nearer the iron ore receiving ports than the head of Lake Superior, which should prove a considerable factor in securing favorable lake freight rates.

Radnor Mine

The Radnor mine, owned by the Canada Iron Furnace Company, has been one of the most important producers of iron ore in Eastern Ontario.

The property consists of 100 acres in lots 16 and 17 concessions nine and ten in the township of Grattan, Renfrew county, and has been worked almost continuously since 1901.

The ore, which is a coarse grained magnetite, occurs in rather narrow beds varying in width from 4 to 10 feet. These beds have a general strike northwest and southeast, following each other almost in a semicircle, with an average dip of 34 degrees to the southwest, and lie in a micaceous gneiss, cut here and there by pegmatite dikes, penetrating the ore bodies in some cases.[11]

Mining is conducted in a series of 8 open cut pits, that follow the general semicircular trend of the ore, No. 8 pit being at the northwest end and No. 1 pit at the southeast extremity of the semicircle.

No. 2 pit is the largest, being 300 feet long with an average width of 35 feet, and is 40 feet deep. At its west end an incline shaft 8x18 feet has been sunk for 80 feet from the bottom of the pit, following the ore, which dips 35 degrees to the south. This shaft is equipped with a skiproad from the bottom to the top of the open cut, and shows the ore to be 10 feet wide at the top narrowing to six feet at the bottom.

Latterly all mining operations have been confined to pits 7 and 8, and extensive stripping of the overburden was carried out during the spring and summer of 1907 in preparation for opening the deposits on a larger scale.

Considerable diamond drilling has been done in the edge of the semicircle referred to above, and this drilling is said to have proved the deposit at depth.

The ore is raised by a 25-h.p. steam hoist, and also by horse whim operating a boom derrick, and is piled in bins, or along the hillside above the road, where it can be conveniently loaded by chutes into sleighs, thence hauled 3½ miles to Caldwell Station on the Grand Trunk railway. An average of 100 tons is mined per day.

Considerable difficulty is experienced in the winter months in keeping the open cuts free of snow, and in consequence frequent shut downs have resulted.

The run of mine is sorted by hand into two grades,[12] that running 48-50 per cent. in iron is shipped to the Company's furnaces at Radnor, Quebec, while the low grade, containing about 30 per cent. of iron is stocked at the mine. There is a considerable tonnage of this low grade ore which could be treated by magnetic concentration at a profit, provided mining costs could be kept low enough. An average analysis of the ore[13] shipped is shown below:—

Fe	SiO_2	S
47.50	19.5	0.25

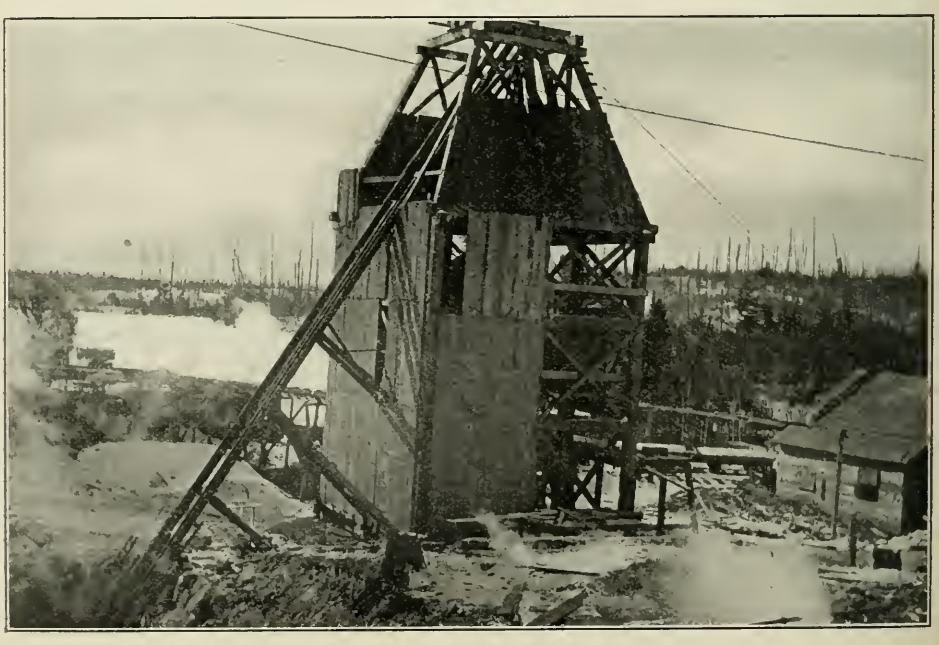
Mineral Range Iron Mining Company

The Mineral Range Iron Mining Company was organized in 1902 by Mr. H. C. Farnum, to take over certain iron properties in the townships of Dungannon and Mayo, Hastings county. These deposits of magnetic ore had been prospected to some extent during the previous years by Mr. Farnum, and their exploitation and development are entirely due to that gentleman. The company control about 3,700 acres of mining lands, of which less than one-fifth are under development, the outlying ore bodies not as yet being reached by the railroad spur.

Near L'Amable station on the Central Ontario railway, a branch line called the Bessemer and Barry's Bay railway extends in an easterly direction for five and a half miles to the village of Bessemer in Mayo township, where the principal iron mines are located. Here are built the company's offices, stores, saw mill, comfortable houses for miners and members of the staff, railroad scales and chemical laboratory. A school is proposed to be built at an early date.

[11]Rep. Bur. Min., Vol. 11 (1902), p. 259. [12]Bur. Min. Rep., Vol. 14 (1905), p. 77. [13]Analysis supplied by Mr. G. D. Drummond, Canada Iron Furnace Co., Midland.

Mineral Range Iron Mining Company ; railway siding..



Mineral Range Iron Mining Company ; shaft and crusher house.

There are at present four ore bodies opened up at Bessemer, with a fifth called the Child's mine, situated two and a half miles to the east. Of the five, only two at Bessemer were being worked at the time of my visit, producing in the neighborhood of 135 tons per day of 10 hours.

All the ore bodies have a general strike N.E. and S.W., with a dip of 60 degrees to the south, and lie in diorite schists and greenstones mainly, with one or two intrusions of gneissoid granite. Crystalline limestone is found on the foot wall of all four ore bodies at Bessemer. The ore is generally fine grained magnetite, and the best quality will average 60 per cent. in iron, although considerable cobbing would have to be done on the general run of mine to keep it up to that standard. Phosphorus is well within the bessemer limit, and sulphur, which occurs as iron pyrites, is found in small stringers easily separated by hand sorting.

At No. 3 open cut the pit 36 feet deep and 80 feet square is all in ore. This ore body is approximately 300 feet wide, and has been opened for 800 feet in length. Unfortunately, the ore is not all high grade and must be cobbed freely. About 35 tons of high grade and 50 tons of low grade ore are mined per day from this pit. A diamond drill hole has been put down, and at 160 feet in depth the ore showed no change. The ore is hoisted by a 70-foot boom derrick, operated by a 5-h.p. double drum hoist, steam being supplied by two boilers of 20 and 25-h.p. respectively. Drilling is done by machine drills run by steam.

No. 4 mine is an open cut 55 feet deep and 500 feet long. This pit is producing 100 tons daily of shipping ore. At the west end of the open cut, a three compartment 8 x 14 foot shaft is being put down, following the dip of the ore, and will be of considerable assistance in increasing the output. The ore is first sorted in the pit, and then hoisted by a 2-ton skip and dumped direct into a No. 6 Gates crusher, that delivers to a storage bin of 40 tons capacity. From this bin the ore is loaded into ralroad cars alongside the crusher house. Ore from No. 3 pit is trammed to No. 4 and dumped into a 60-ton bin, situated immediately over the collar of the incline shaft. From this bin it is loaded into the skip and hoisted to the crusher.

The Gates crusher is run by a 50-h.p. engine, situated on the ground floor of the crusher house. Hoisting is accomplished by a 5-h.p. single drum hoist, steam being supplied by two 80-h.p. boilers of the locomotive type, one being used at a time. The machine drills are operated by steam as at No. 3.

The ore body at No. 4 is 55 feet wide, both walls being clearly defined, and can be traced for 1,800 feet in length on the hanging wall side, and for 40 feet towards the foot wall. The ore is high grade, very little sorting being necessary. The remaining 15 feet of ore is of second quality and high in sulphur. The pyrites however is not disseminated throughout the ore, but is found in fairly large masses, and along the contact of the ore and country rock, hence it appears to offer an easy problem for magnetic concentration.

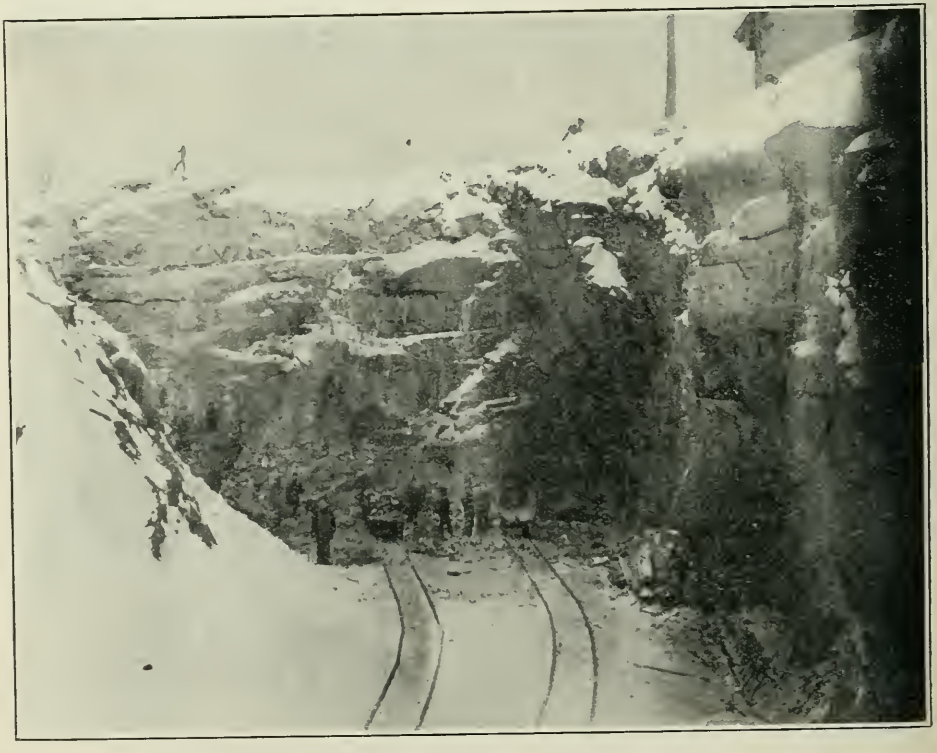
At the Child's mine, there is an immense body of low grade ore, averaging 40 per cent. in metallic iron; phosphorus and sulphur are both within bessemer limits, the gangue consisting of intermixed hornblende and calcite, with a varying proportion of silica. This large ore body, together with the amount of low grade magnetite from the deposits at Bessemer, could easily supply a concentrating mill of 1,000 tons daily capacity for many years. Cheap electric power could be developed at Egan's chutes on the York branch of the Madawaska river, 4½ miles from Bessemer. The chutes have a total fall of 22 feet.

At the present time the mines are shipping to The Canada Iron Furnace Company, at Midland, Ontario, and Radnor, Quebec, also to the Deseronto Iron Company of Deseronto. An average analysis[14] of the shipping ore is as follows:—

Fe.	SiO_2	Al_2O_3	P	Mn	CoO	MgO	S
54.29	9.84	2.02	0.019	0.38	6.86	1.35	.062

[14] Analysis supplied by Mr. G. P. Drummond, Canada Iron Furnace Co., Midland, Ont.

Childs mine, Mineral Range Iron Mining Company.



Mineral Range Iron Mining Company. Open cut at No. 4 mine.

Wilbur Mine

This property is one of the more promising mines in the eastern part of the Province. Located in the township of Lavant, Renfrew county, about 60 miles north of Kingston on the Kingston and Pembroke railway, the Wilbur, in company with other mines of the district, has had in the past an alternating series of active and dormant periods.

At the present time the mine is operated under lease from the owners by the Wilbur Iron Ore Company, and the product is for the most part being shipped to the Algoma Steel Company of Sault Ste. Marie.

The ore is magnetic, more or less coarsely crystalline, and seamed with chlorite and calcite. The percentage of iron in the run of mine will average 50, but this is brought up to 55 by sorting. Sulphur and phosphorus are both low, and the ore will rank as a bessemer.

The magnetite is found as a series of detached ore bodies[15] at the contact of crystalline limestone and gneissoid granite, limestone being invariably found on the foot wall. The strike of the contact at the principal workings is approximately a little east of north, and the ore body dips at an angle of 27 degrees to the east, passing underneath the gneiss, the formation flattening out in depth in some places as low as 8 or 10 degrees.

Diamond drilling has been done to a considerable extent, some 27 holes having been put down at various times, varying in depth from 60 to 350 feet. Unfortunately, records of these holes have not been kept, but it is stated that the ore pierced by the different drillings was from 3 to 28 feet in thickness. There are eight workings altogether, the most important being known as No. 3A, 3B, and No. 4. The work at 3A and 3B consists of two incline shafts sunk from the bottom of a shallow open cut. The old shaft 3A is inclined at an angle of 30 degrees and is 150 feet deep. The collar of shaft 3B is about 30 feet north of 3A, and has a starting incline if 27 degrees, but flattens out considerably at depth. This shaft has attained to a depth of 350 feet and is the only one being worked at present.

Workings 3A and 3B are connected by drifting at two different points, and levels have been started in a northerly direction at three points in shaft 3B, the ore being extracted by both overhand and underhand stoping. The output of the mine at present is 150 tons per day, but this will be increased before long to 200 tons daily.

The ore is hoisted by skip, and dumps direct to a 10 x 20-inch Blake crusher, from which it is carried by a bucket elevator to a sorting belt, running at right angles to the elevator, and situated on top of the shipping pockets, which are built immediately over the railroad spur. There are 13 of these pockets, one or two being used for waste, the remainder for ore. Provision is made whereby the ore can be loaded from the pockets through bottom gates into gondola cars, or else chuted into box cars through side gates.

The hoist and crusher house contains a double cylinder single drum hoist operating the skip, the Blake crusher and a 12 x 16-inch single engine for driving the crusher, elevator and sorting belt. In the power house, which is a separate building, are two boilers of 180 combined horsepower, a 3-drill Barber air compressor, and a small electric light plant, supplying the mine workings both under and above ground, also the office and store. Railroad scales have been built and all ore is weighed before being shipped.

An analysis of the shipping ore is as follows:

Fe.	Insoluble.	S.	P.
55.49	3.45	0.04	0.022

[15] Iron Ore Deposits along the Kingston & Pembroke Railway, by E. P. Ingall: Geo. Sur. Can., Annual Report, Vol. XII.

III.—The Magnetic Concentration of Iron Ores

It has been pointed out in preceding pages that there are numerous localities in Ontario where magnetic iron ore occurs in considerable quantities, and if it were not for certain harmful substances found associatel with these ores, they would have considerable commercial value on account of their proximity to the consuming markets. Sulphur and phosphorus are the most common and hurtful of the obnoxious elements, and by their presence or absence in appreciable amounts, determine whether an ore is fit for the manufacture of certain grades of iron and steel. Fortunately, it happens that in the great majority of cases, these pernicious substances exist as separate chemical compounds that are not so susceptible to magnetic influence as the pure magnetite itself, and by taking advantage of this circumstnce these compounds can be eliminated, and the ore made suitable for smelting.

This fact has led to the expenditure of much money and ingenuity in attempts to perfect a magnetic separating machine that will accomplish the desired result in an effective and economical manner. The patent office files of the United States and some of the European countries, notably Sweden, are replete with hundreds of records covering the many attempts to devise such machines. Most of the earlier types of magnetic separators invented were weak and could only be applied to highly magnetic material; in others the arrangement of the magnetic field was such that they yielded but indifferent results, and the mechanical construction being complicated, the cost of operation and repairs was excessive.

Of late years the question of design of these machines has been better understood, and as the necessity for magnetic concentration became more and more apparent their construction fell naturally into the hands of competent electricians, with the result that we have at the present time several different types of machines, adapted to different requirements, and giving satisfactory results on a commercial scale.

The constantly increasing drain on the iron ore supply of the world, and particularly of this continent, is a fact well understood by all iron men. The best grade of ores is becoming scarcer with prices correspondingly higher year by year. A short time ago the markets were glutted with rich ores at moderate prices, and it would then doubtless have proved unprofitable to attempt the mining and concentration of low grade deposits. However, the tremendous rate of consumption of iron ore during the past decade has altered this state of affairs considerably, and at the present time the winning of the poorer ores is regarded not only as a profitable investment, but as a necessary auxiliary to the main ore supply.

The following table[16] shows the range of prices for Lake Superior ores during the three years beginning with 1906, and also the lowering which is going on in the standard for metallic contents:

Bessemer Ores.	Old Range.			Mesabi.			Non-Bessemer.	Old Range.			Mesabi.		
	1906	1907	1908	1906	1907	1908		1906	1907	1908	1906	1907	1908
Iron % natural	56.70	55.00	....	56.7	55.00	....	Iron % natural	52.08	51.5	....	52.8	51.5	....
Moisture	10.00	10.00	....	10.00	10.00	....	Moisture	12.00	12.00	....	12.00	12.00	....
Iron % dried at 212°	63.00	61.12	....	63.00	61.12	....	Iron % dried at 212°	60.00	58.52	....	60.00	58.52	....
Phos. %	0.045	0.045	....	0.045	0.045	....							
Base Price $	4.25	5.00	5.00	4.00	4.75	4.75	Base Price $	3.70	4.20	4.20	3.50	4.00	4.00

It will be noted in the above table that the iron content for standard ores in the natural was 56.7 per cent. in 1906 and reduced to 55 per cent. in 1907, with an increase in price of 75 cents per ton. No doubt the standard will suffer future reductions as the high grade ores become scarcer. This point is appreciated keenly by furnacemen,

[16] The Mineral Industry, 1906, and Iron Age, February 13th, 1908.

for an increase in the average percentage of iron contained in the ore charged to the furnace means increased output, lower fuel consumption, less flux required, and consequently a more evenly running furnace at lower costs per ton of iron produced.

Concentrates in the Furnace

Magnetic concentrates when carefully prepared will materially assist in proper furnace control. Not only are they low in sulphur, phosphorus, and slag-forming ingredients, but the percentage of iron will be nearly uniform, varying only a fraction of one per cent. from time to time. This is an item of great importance, for uniformity in the grade of raw materials is much desired and appreciated by all furnacemen.

There is, however, one serious drawback to the successful use of some concentrates, and that is the fineness of the material. If it is found necessary to grind the crude ore to a fine state of subdivision in order to make a clean separation, the resulting product will be unfit for direct use in the furnace, because a large portion of these fines when charged will be lifted up and carried out of the furnace by the rush of the ascending gas currents, filling up the gas mains, and accumulating under the boilers and in the hot blast stoves. The portion which remains in the furnace will also contribute its share of trouble by non-uniformity of descent with the coke and limestone, giving rise to irregularities in the smelting operations. Concentrates of this character require a preliminary treatment before they can be used in the blast furnace, such treatment consisting of a process of briquetting or nodulizing, forming small bricks or nodular masses of the fine material.

Just what degree of fineness makes the use of this concentrated ore prohibitive, without any preliminary treatment, depends on the percentage of pulverized material in the concentrates. In the use of Mesabi ores, it is stated[17] that where less than 12 per cent. passes through an 80-mesh sieve, such ores are considered as having good physical structure, from 12 to 18 per cent. a fair structure, and more than 18 per cent. a poor structure, but it is also pointed out that ores other than the Mesabi have been successfully smelted that contained as much as 20 per cent. of material fine enough to pass a 100-mesh sieve. Hence it is evident that a fair comparison with fine ores of the Mesabi type cannot be made. However, it may be taken as an axiom, that concentrates containing more than 20 per cent. of fine material that will pass an 80-mesh sieve, will give considerable trouble and should undergo some process of agglutinizing before they can be smelted with profit.

As a factor in the manufacture of steel in the open hearth, the value of magnetic concentrates has been proved beyond a doubt, and is freely conceded by practical steel makers. The process of electric manufacture of iron and steel, although in its infancy at present, will doubtless prove a large user of these concentrates, and as there is a promising future in Ontario for the production of iron and steel by electricity, the market for concentrated iron ores will undoubtedly expand.

Magnetic Attraction the Basis of Concentration

Most people are familiar with the fact that a magnet will attract iron, but few are aware that a magnet can be designed and built strong enough to attract almost any material. The cost of building and operating such a magnet for the commercial concentration of many materials is usually prohibitive. But nevertheless the fact remains, and it may be stated as a curious circumstance that pieces of wood, apples and other things generally considered non-magnetic, have been moved magnetically through several inches.[18]

[17] The Use of High Percentage of Mesabi Iron Ores in Coke Blast Furnace Practice, by W. A. Barrows. Trans Am. Inst. M.E. Vol. XXXV., page 140.

[18] Magnetic Separation, by F. S. Snyder, Journal Can. Min. Inst., Vol. VII., page 270

In this report the problem of magnetic attraction and consequent separation of the mineral magnetite from its associated gangue or rock matter will be considered, and a description of the salient features only of the process will be discussed. For more extended literature on the subject the reader may consult the list of references given at the end of the report.

All of the iron-bearing minerals are more or less susceptible to magnetic attraction. The relative permeability (magnetic conductivity) of the different minerals has been worked out by Walter Crane.[19] A partial list is as follows:—

Mineral.	Permeability.
Iron	2.1617
Magnetite	1.4669
Franklinite	1.4112
Ilmenite	1.2871
Pyrrhotite	1.0782
Hematite	1.0242
Siderite	1.0234
Limonite	1.0099
Pyrite	1.0064
Quartz	1.0055
Apatite	1.0026

It is evident that if a difference in permeability affords a means of separating the minerals, the wider this difference is, the easier will be the operation. Particles of pyrite or apatite can be easily separated from particles of magnetite, particles of ilmenite and pyrrhotite not so easily. However, this point is thoroughly understood by designers, and has been so well taken advantage of in certain type of machines, that a very small difference in the permeability of two different minerals will afford the means of separating them.

The Problem of Concentration

Concentration or separation of any ore from its gangue means the selection of the valuable mineral contained therein from the worthless rock matter. Obviously, the simplest method of effecting the selection is by hand sorting or cobbing. With some of the soft ores mixed with clay or calcareous matter, concentration consists of a system of crushing and treatment in pulsating water jigs, or by means of the log washer used in the Southern States, which is described as a tilted cylinder rotating on its longer axis, with side paddles forcing the ore upwards against a descending stream of water which washes away the clay and fine material through screens at the lower end, while the clean ore passes to ore cars at the upper end.[20] Hand sorting is slow and costly, and when the particles of valuable mineral and gangue are small and intimately mixed, an effective separation is difficult. Hydraulic classification and jigging methods depend upon the difference in specific gravity of the constituent minerals; and when magnetite is associated with pyrite, both of about the same weight and hardness, hydraulic separation does not afford commercial results. With the electro-magnet, the difference in permeability between the magnetite and pyrite affords a commercial method of separation, and even the mineral pyrrhotite may be eliminated by a magnetic separating machine of suitable design.

In all cases, efficient magnetic separation will depend upon the various mineral constituents of the crude ore being crushed or broken fine enough, so that individual grains are free to be attracted or rejected according to their permeability. Just here is the crucial point. If the ore must be pulverized very fine say to 50-mesh (0.010 inch) to obtain an efficient recovery of the magnetite particles, the cost of crushing will be much more than if such preliminary treatment consisted in breaking the ore to 5-mesh (0.10 inch). For example, a cube that will pass through a 0.1 inch hole must be reduced to 1/1000 of its original mass in order to pass a 0.01 inch hole, the difference in the cost

[19] Trans. Am. Inst. M.E., Vol. XXXI., page 444.

[20] Magnetic Concentration of Iron Ores, by J. Walter Wells, Bur. Min. Rep., Vol. XII. (1903), page 323.

of producing these two grades being a consideration of some importance. Then again the fine grained product, as has been pointed out, is not so desirable from the furnaceman's point of view.

As a general rule it may be stated that the preliminary crushing should be carried only far enough to break away the average sized particles of magnetite from the gangue, and at this point a three-part separation should begin. The products of this process are pure magnetite requiring no further treatment, tailings that can be disposed of as waste, and middlings consisting of part magnetite and part gangue that should be re-crushed for a secondary concentration, the products of this secondary concentration being added to the heads and tails of the first separation. If the tailings from the secondary concentration still contain an appreciable quantity of magnetite, it may be found profitable to re-grind them and make a third separation, the economical point to which separation may be carried depending upon the percentage of iron in the crude ore, the cost of crushing, and the value of the concentrates produced.

There are exceptions to the foregoing in cases where the crude ore consists of magnetite and gangue matter in so fine a state of crystallization and so intimately mixed that the whole mass must be reduced by crushing and grinding to 80 or 100-mesh in order to free the particles of magnetite. In consequence of this excessive pulverization, the ordinary methods of dry separation do not afford efficient results, and such finely ground ores must be treated by a special wet process.

Factors of the Problem

To gain an idea of the efficiency of any proposed method of ore separation, the investigator should have representative samples of the crude ore, the concentrates and the tailings, obtained under conditions that are approximately similar to those in actual commercial practice. The efficiency and value of any such system may then be determined by the application of the following simple equations,[21] together with due consideration of the physical character of the crude ore and concentrates, the capacity and durability of the concentrating machines, the requisite method of preparing the crude ore for separation, and the power and labor required for the operation of the process.

Let a = Per cent. of magnetite in the concentrate.
b = " " " tailings.
c = " " " crude ore.
d = Units of crude ore required to make one unit of concentrate.
e = Units of tailings for one unit of concentrate.
f = Per cent. of magnetite in the crude ore which is saved in the concentrate.
g = Per cent. of magnetite in the crude ore which is lost in the tailings.

Then (1) $\frac{a-b}{c-b}=d.$ (3) $\frac{100\ a}{cd}=f.$

(2) $\frac{cd-a}{e}=b.$ (4) $\frac{100\ be}{cd}=g.$

(Note....Per cent. of iron divided by 0.7242=per cent. of magnetite. Per cent. of magnetite multiplied by 0.7242=per cent. of iron.)

Example. A certain ore contains 50 per cent. of magnetite and 50 per cent. of gangue. In separating this ore, the per cent. of magnetite in the concentrates is 90 (65.178 per cent. iron) with 4.5 per cent. of magnetite (3.26 per cent. iron) left

[21] See "The Magnetic Separation of Iron Ores," by Clinton M. Ball, Trans. Am. Inst. M.E., Vol. XXV., page 533

in the tailings. According to equation (1), $\frac{90-4.5}{50-4.5}=1.879$ units of crude ore are required to make one unit of concentrate, and by equation (3) we have $\frac{90\times 100}{1.879\times 50}$ =95.79 per cent. of the magnetite in the crude saved in the concentrate, with 4.21 per cent. lost in the tailings, hence the efficiency of the operation is very nearly 96 per cent.

Equation (4) is used to check equation (3) and equation (2) to check the accuracy of mine and mill reports. The following analysis may make this more clear:—

10 units of crude ore, half magnetite and half gangue. =	5.322 units of concentrates (53.22 p.c.) =	Magnetite = 90 p.c. = 4.79 units			
		Gangue = 10 p.c. = 0.532 "			
					5.322 units
	4.678 units of tailings (46.78 p.c.) =	Magnetite = 4.5 p.c. = 0.21			
		Gangue = 95.5 p.c. = 4.468			
					4.678
				Total	10.00

By this analysis it is seen that 4.79 units of magnetite in the concentrates divided by 5 original units of magnetite in the crude ore=95.8 per cent. of the magnetite in crude ore saved in concentration, and 0.21 units of magnetite in the tailings divided by 5 original units of magnetite in the crude ore=4.2 per cent. of the magnetite which is lost in the tailings. Also the ten original units of crude ore divided by 5.322 units of concentrates=1.879 crude units per unit of concentrate.

In the above it is assumed that the crushed ore was ready for complete separation at once, the per cent. of magnetite in the tailings being so low that it is doubtful whether re-crushing and re-separation would prove profitable.

Three-Part Separation

Now, suppose that the crude ore is of such a character physically that after preliminary crushing it is found best to make a three-part separation, nine-tenths of the original ore making concentrates and tailings, and one-tenth a middling product that would in quality correspond very closely to the original crude ore. The preceding analysis and equation shows that 1.879 units of this crude ore if properly treated would make one unit of concentrate consisting of 90 per cent. of magnetite and 10 per cent. of gangue, and 0.879 unit of tailings consisting of 4.5 per cent. of magnetite and 95.5 per cent. of gangue, the concentrates constituting 53.22 per cent. and the tailings 46.78 per cent. of the crude ore thus treated. A consideration of the following analysis will show the importance of understanding the distribution of the products derived from ten units of crude ore by this three-part system.

				P.C.		Units	Units
10 units crude ore	9 units =	Concentrate 53.22 p.c. =	Magnetite	90	= 4.311		
			Gangue	10	= .479		
							4.79
		Tailings 46.78 p.c. =	Magnetite	4.5	= 0.19		
			Gangue	95.5	= 4.02		
							4.21
	1 unit of middlings same as crude re-crushed and re-separated =	Concentrate 53.22 p.c. =	Magnetite	90	= 0.47898		
			Gangue	10	= 0.05322		
							0.5322
		Tailings 46.78 p.c. =	Magnetite	4.5	= 0.021051		
			Gangue	95.5	= 0.446749		
							0.4678
						Total	10.00

The sum of the concentrate units being 5.322, and of the tailings 4.6778, making a total of 10.

If instead of re-crushing and re-separating the middlings they are added to the concentrate the result would be:—

			P.C.		Units	Units
10 units of crude ore	Concentrate 57.9 p.c.	Magnetite	83.09	=	4.811	
		Gangue	16.91	=	0.979	5.79
	Tailings 42.1 p.c.	Magnetite	4.5	=	0.19	
		Gangue	95.5	=	4.02	4.21
				Total.....		10.00

Thus increasing the percentage of concentrate obtained from the crude ore, from 53.22 to 57.9 per cent., but at the same time increasing the gangue in the concentrate from 10 per cent. to nearly 17 per cent., the percentage of iron in the concentrate being lowered thereby from 65.178 to 60.17, the percentage of waste remaining the same. If on the other hand to avoid this depreciation in quality of the concentrates, the middlings are thrown away with the tailings. the result would be:—

			P.C.		Units	Unit
10 units of crude ore=	Concentrate 47.9 p.c. =	Magnetite	= 90	=	4.311	
		Gangue	= 10	=	.479	4.79
	Tailings 52.1 p.c. =	Magnetite	= 13.24	=	0.69	
		Gangue	= 18.76	=	4.52	5.21
				Total.....		10.00

Hence it is clear that 4.311 units of magnetite in the concentrate divided by 5 original magnetite units in the crude ore=86.2 per cent. of the magnetite in the crude saved in concentration instead of 90, and 0.69 divided by 5=13.8 per cent. of magnetite lost in the tailings instead of 4.2. as in the three-part separation; also that 10 divided by 4.79 concentrate units=2.087 crude units required to make 1 concentrate unit, instead of 1.879 required as in the three-part separation, a difference of 0.208 units.

It is evident that if the ore will respond to this system of separation, a fine crushing of the whole mass in one operation would be an unreasonable expense, and should be avoided. It is also apparent that as much as possible of the magnetite in the crude ore should be saved, because if the ore is costing 75 cents a ton delivered at the mill, a difference of 0.208 tons in the amount of crude required to make one ton of concentrate is equivalent to 15.6 cents a ton, for or against, the initial value of the crude ore. The difference between concentrates containing 60 and 65 per cent. of iron is also of great importance to the consumer, for it means an increased output of iron from the furnace, with a corresponding reduction in the final cost per ton of pig iron.

The following table[22] prepared by Mr. John Birkinbine may be of interest showing the theoretical quantity of ore of any percentage of iron betwen 20 and 55, which is necessary to produce one ton of 65 per cent. concentrate with a loss of 10 per cent. of iron in the tailings. Allowance is also made for a 5 per cent. loss in dust, moisture, and sulphur.

[22] Trans. Am. Inst. M.E. Vol. XX, p. 598.

Table showing Theoretical Tonnage Ratio of Crude Ore in Concentrate

Iron in Crude Ore	Crude Ore required to produce one ton of 65 per cent. Concentrates, and allowing 10 per cent. loss in the tailings.	
	Without allowance for dust, etc.	Allowing 5 per cent. for dust, etc.
Per cent.	Tons	Tons.
20	5.500	5.775
21	5.500	5.250
22	4.583	4.812
23	4.231	4.443
24	3.929	4.425
25	3.667	3.850
26	3.438	3.610
27	3.235	3.397
28	3.056	3.209
29	2.895	3.040
30	2.750	2.888
31	2.619	2.750
32	2.500	2.625
33	2.391	2.511
34	2.292	2.407
35	2.200	2.310
36	2.115	2.221
37	2.037	2.139
38	1.964	2.062
39	1.897	1.992
40	1.833	1.925
41	1.774	1.863
42	1.719	1.805
43	1.667	1.750
44	1·618	1.669
45	1.571	1.650
46	1.528	1.604
47	1.428	1.560
48	1.447	1.519
49	1.410	1.481
50	1.375	1.444
51	1.341	1.408
52	1.310	1.376
53	1.279	1.342
54	1.250	1.313
55	1.222	1.283

Types of Magnetic Separators

A complete description of all the various types of magnetic separators is alike beyond the scope of this report and the knowledge of the writer. Accordingly, only a few of the various machines will be described and only those which, so far as known, are giving commercial results.

Generally speaking, there are two distinct methods of separating iron ore in use at the present time:

(1) Dry separation, which requires the crude ore to be thoroughly dried before it is separated, and is applicable only to those ores that do not require fine grinding. (2) Wet separation, which necessitates the concentrates being dried before they are briquetted or nodulized, and is specially applicable to those ores that require fine grinding in order to separate the constituent minerals.

The various types of separators have been classified by J. Walter Wells[23] as follows, and for the present purpose this classification will suffice:—

(1) Those in which the ore is fed on conveying belts either traversing magnets or traversed by them. Examples are the Conkling, Wetherill, Ball & Norton belt machine, Chase, Hoffman, Kessler, Knowles and similar machines.

(2) Those in which the ore is fed upon a revolving drum, within which is arranged a system of magnets. Examples are the Ball & Norton, Gröndal, Heberli, Wenstrom, Buchanan, Sautter, Siemens, Payne and others.

[23] Bur. Min. Rep. 1903, Vol. XII., p. 325.

(3) Those in which the ore falls vertically past magnets. Examples are:—Heberli, Gröndal-Delvik, Rowand, International (a new machine), and the Edison system.

Belt Machines

The Conkling separator, although not in use at the present time, illustrates the earlier type of belt machine, and may be briefly described as an endless feed belt above which are suspended three electro magnets. Between the magnets and the feed belt smaller belts are run at right angles, carrying off the concentrates as

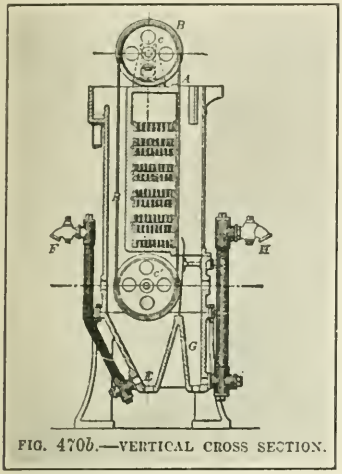


FIG. 470*b*.—VERTICAL CROSS SECTION.

The Grondal Delvik magnetic separator.

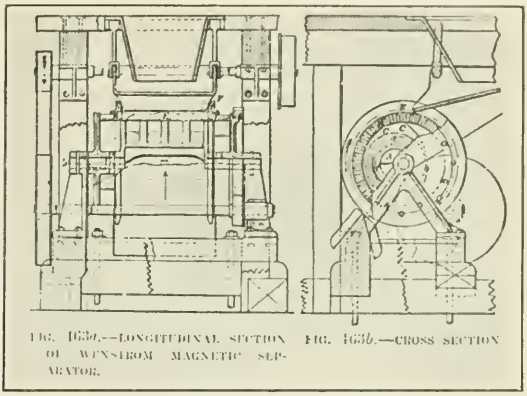
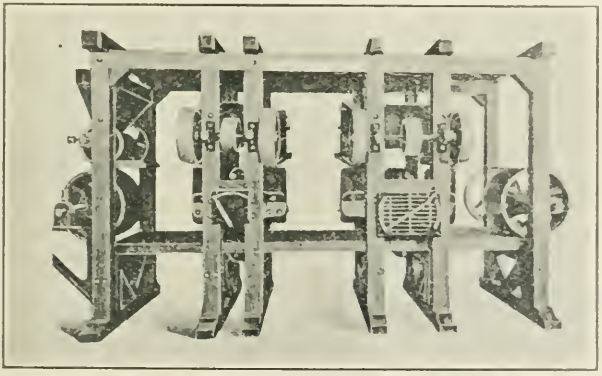


FIG. 163*a*.—LONGITUDINAL SECTION OF WENSTROM MAGNETIC SEPARATOR.

FIG. 163*b*.—CROSS SECTION

The Wenstrom magnetic separator.

they are lifted by the magnets from the feed belt, the tailings being conveyed over the end of the main belt. This machine has not been very successful, although in an improved form it has been used to some extent at the Tilly Foster mine in New York State.



Wetherill magnetic separator, type E.

The Wetherill belt machine is a type that has been in more or less successful operation for some years, and is made in different forms to suit different requirements. Its construction is shown in the accompanying diagram. The ore is fed upon an endless belt that passes between the pole pieces of electro-magnets. Cross

belts carry the magnetic heads to one side, and the tailings pass undisturbed to the discharge end of the feed belt. The arrangement of passing the feed between the poles of the magnets is a distinct advance upon the Conkling type, because the feed belt cuts the lines of force at one point only. In the Conkling, both poles being on the same side of the feed belt, the lines of force are looped and are cut twice, consequently the magnetic particles are given a swirling motion, and much dust is carried along mechanically with the heads. This is avoided in the Wetherill, and as the pole pieces are hatchet shaped, the lines of force are concentrated where most needed, thus making the machine very effective on weakly magnetic material. The Wetherill separator is used in Mineville, New York State, to separate hornblende from apatite. It has also found some use in South Africa separating garnets from diamonds, and at the Franklin Furnace, New Jersey, in the separation of zinc ores. Another purpose for which the machine has been found efficient is the cleaning of monazite sands. The accompanying photograph of a full sized Wetherill separator shows it to be rather complicated. The construction is such that repairs are heavy if any considerable tonnage is handled.

The Ball & Norton belt machine has been developed at the plant of the Witherbee Sherman Company, New York State, and as regards simplicity of design and efficiency of operation on the material for which it is intended, is giving every satisfaction. The magnets are arranged in a series of alternating polarity which causes each particle of magnetite to turn over and over as it passes through the field, producing a jigging motion, and allowing the entrained particles of gangue to fall away. The ore is fed to a wide belt carrying it into the magnetic field, where the particles of magnetite jump towards the magnets, and are held in suspension by the take-off belt as it passes through the field. The concentrates are delivered by the retaining force of the magnets and the forward motion of the take-off belt. The tailings are delivered partly from the feed belt and partly by the jigging process that takes place underneath the magnets. The take-off belt is run from three to four times as fast as the feed belt, but this ratio must be determined experimentally for any given ore. The magnets may be of any number desired, and by dividing them into two or more sections, each controlled by a rheostat, any degree of concentration may be obtained, as for instance a three-part separation.

Drum Machines

One of the best types of magnetic separators is the Ball and Norton double drum machine. This separator has been in successful operation for the past 15 years, with gratifying results. According to Mr. Ball,[24] the essential features are as follows:—

(1) A stationary range of magnetic poles of alternating opposite polarity in the direction of the ore travel, underneath which the drums, enclosing the two groups into which the range of poles is divided, may be rotated and may serve as carriers of the granulated ore, the iron particles being held on the underside thereof by magnetic attraction.

(2) Means for applying a strong counter current of air to the moving mass of ore while it is suspended upon the under side of the rapidly-running drums, and being driven along through the machine.

(13) Provisions for classifying the ore under treatment into three grades, this being effected by a differential speed of rotation of the two drums, assisted by relative adjustment of the strength of magnetism in the two groups of alternating magnets.

The drums may be made of any tough non-magnetic material, such as brass or fibre, the cylindrical portion of the casing being covered with thin rubber to protect it from the abrasive action of the sharp particles of ore. If the drum is made of metal, the magnetic field sets up eddy currents travelling across the cylinder at

[24] Trans. Am. Inst. M. E., Vol. XXV., p. 533.

right angles to the direction of rotation, hence consuming a certain amount of power. This is avoided in drums of non-metallic construction, but the metallic drums are more lasting and although requiring more power to drive are generally made of brass

The electro-magnets are stationary and are mounted on a spider that can be moved through any desired arc of circle by means of an outside arm. In the double drum machine there are usually 15 or 16 magnets in the first, and 10 to 12 in the second drum, each set being controlled by a separate rheostat, the strength of the magnetic field being adjusted as required by circumstances. In practice the first drum to which the crude ore is fed is rotated at a speed of 40 to 80 R.P.M., the magnets being excited by a current of about 10 to 16 amperes. The second

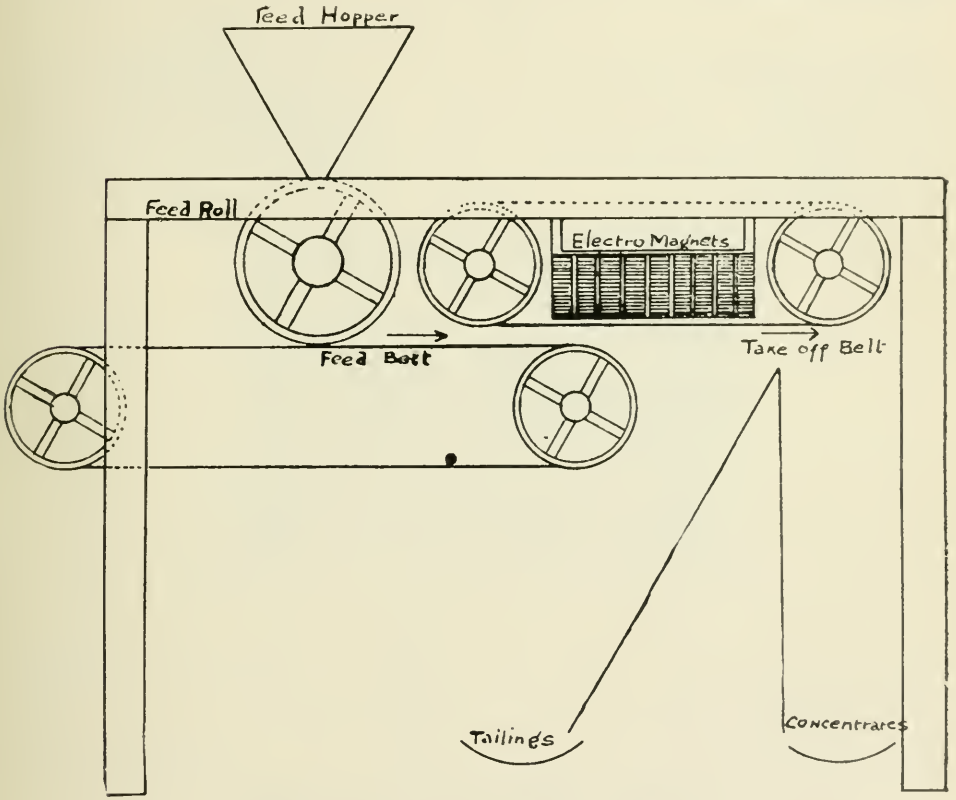


Diagram sketch of Ball and Norton belt separator.

drum is run faster, anywhere from 100 to 150 R.P.M., and the magnets are supplied with less current, approximately from 4 to 8 amperes.

Ore is fed through the hopper on top of the first drum, and the slow speed of this drum with its strong magnetic field, combines to pick up nearly all the magnetic particles, the non-magnetic tailings dropping to the receiving hopper below. The mass of magnetite is carried to the gap between the two drums where it is thrown off against the second drum, and as this second drum is running much faster than the first, with a weaker magnetic field, only the purest magnetite is held, the middlings consisting of part magnetite and part gangue dropping to a second receiving hopper. The pure concentrate is carried forward and thrown off centrifugally as it passes outside of the magnetic field. The middlings may be re-crushed and re-separated in a second operation.

The arrangement of alternate polarity of the magnets causes a tumbling or jigging motion in the mass of ore as it passes over the face of the drums, and allows the non-magnetic particles to weep out. Also the adjustments obtainable, in speed and in strength of magnetic field for each drum, control the power of selection to a nicety.

Very often the machine is built with a single drum, the products obtained being concentrates, and tailings that are re-crushed and re-separated. A single drum machine is giving satisfactory results used as a cobber, at the Witherbee Sherman mines, New York State. The double drum separators are used at the Chateaugay, Mineville, Arnold Hill and Benson mines in New York State, at the Hibernia mines in New Jersey, at Svarto in Sweden, and elsewhere.

The Grondal Separators

Mr. Gustaf Gröndal of Sweden is the inventor of five different separating machines that bear his name. His first attempt was patented in 1897, and is known as the Gröndal type No. 1. A few years afterwards he brought out a second machine, and a third followed shortly afterwards. The Gröndal type 3 separator is in use at the Lebanon plant of the Pennsylvania Steel Company, but is being supplanted by the

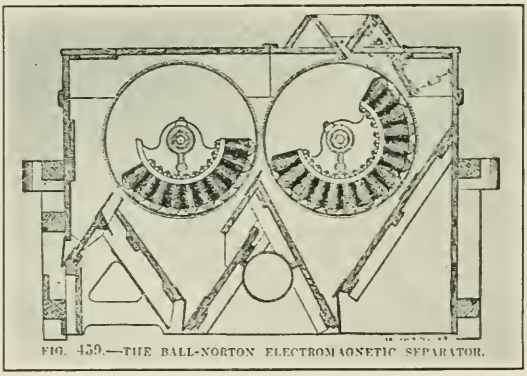


FIG. 459.—THE BALL-NORTON ELECTROMAGNETIC SEPARATOR.

The Ball and Norton electromagnetic separator

Gröndal No. 5. The fourth machine was designed to overcome certain defects that existed in the earlier types, but did not meet with much success, as repair expenses were rather high. The fifth machine is the latest, and has given the best all round results; this separator will be the only one described.

All of the Gröndal separators were designed for wet concentration, that is, the finely ground ore is fed to the machine mixed with water, combining hydraulic classification with magnetic separation.

The Gröndal No. 5[25] consists of a plain brass drum enclosing a series of electromagnets arranged with alternate polarity. This drum is rotated at a speed of 50 to 100 R.P.M., and is so placed that it is just touching or just above the surface of the wet pulp, which traverses a pyramidal box beneath. The finely divided ore is fed into the box at its upper end, meeting a stream of water entering from the bottom, and is washed up over the partition immediately under the drum. The particles of magnetite are lifted out of the water by the magnets inside the drum, and are carried past the field, where they are washed off by a jet of water. The gangue is washed down the other side of the partition and carried off by the waste water. The capacity of one machine is from 50 to 100 tons of ore per 24 hours; it

[25] For information and illustrations of the Gröndal system, I am indebted to Mr. P. McN. Bennie, Niagara Falls, N.Y. The data given is taken from Mr. Bennie's papers on The Gröndal System, read before The Canadian Mining Institute. See Vols. X and XI.

requires about 6 amperes at 120 volts for exciting the magnets and less than one-half horsepower will drive the drums. The drums are usually mounted in pairs, not working conjointly as in the Ball and Norton, but operating singly side by side.

An auxiliary apparatus, also of Gröndal invention, sometimes used in connection with the separators, should be mentioned. By this apparatus the magnetic slimes, formed by the crushers and pulverizers, are saved. Before its introduction most of the iron contained in the slimes was washed away and lost. The essential feature

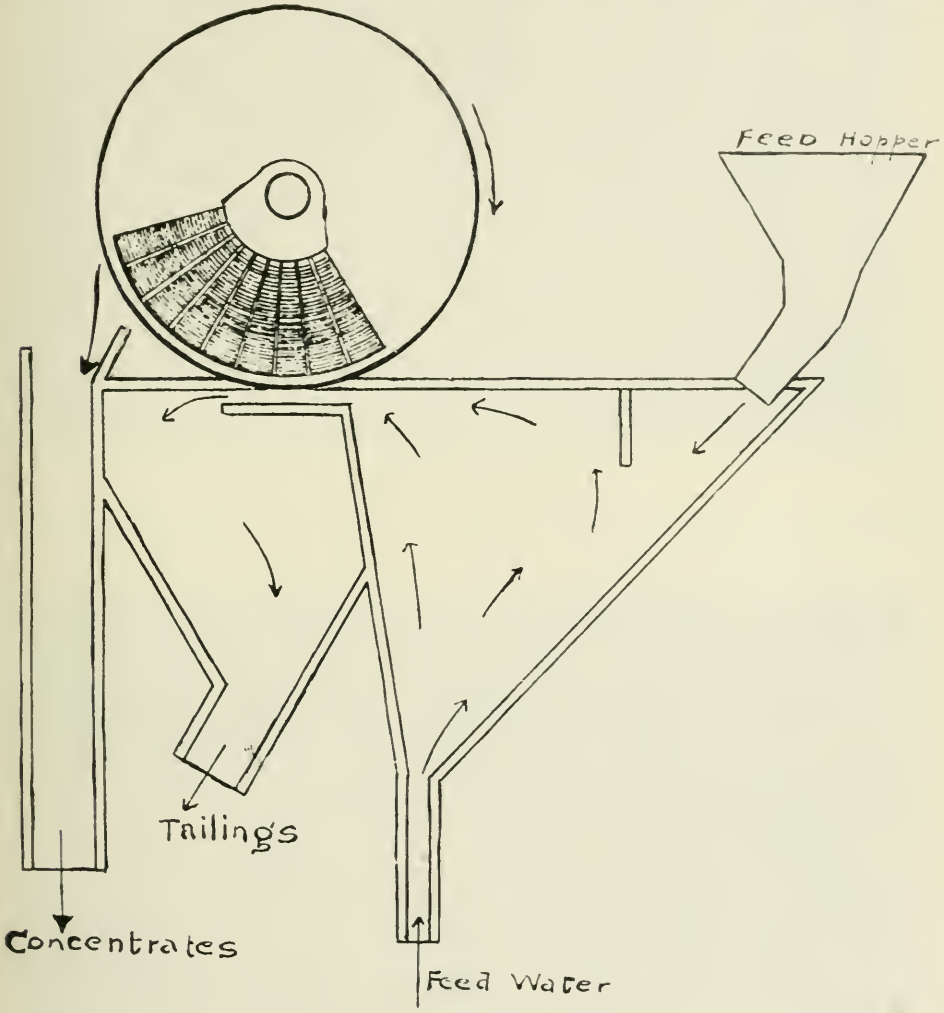
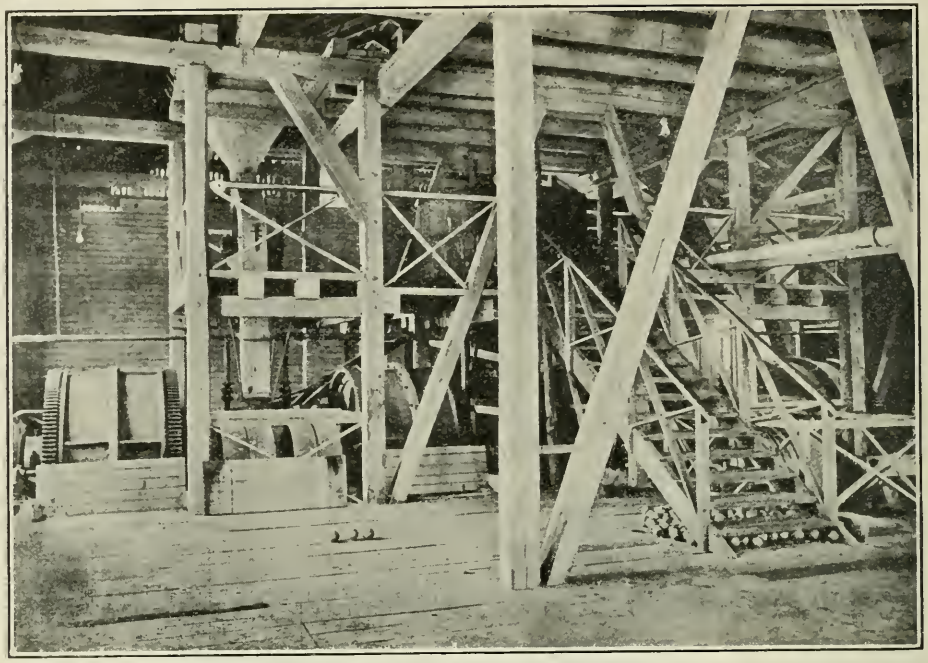
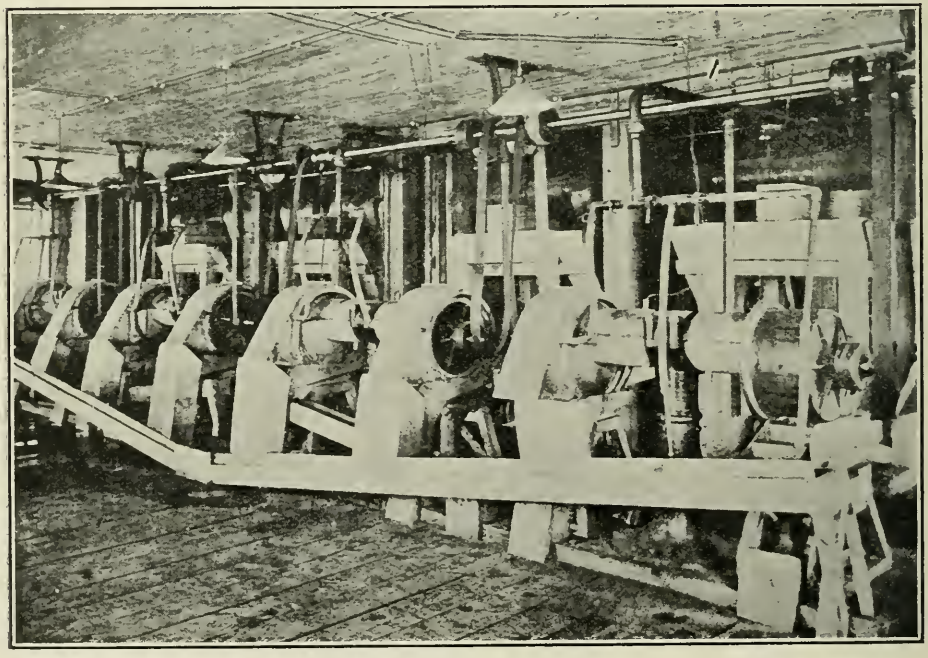


Diagram sketch of the Gröndal separator.

of this slime treater is an electro-magnet with hatchet-shaped pole pieces, suspended over pyramidic boxes. These boxes are kept full of flowing water, and the pulp is fed in at one end. The velocity of the water is so arranged that the heavier particles settle to the bottom at once, the fine slimes pass underneath the poles of the magnets, which are of sufficient strength, just not to lift out of the water, but to collect in bunches the magnetic particles that from time to time sink by their own weight to the bottom of the box, and are drawn off with the main pulp and sent to the separators.



Ball mills at Herrang.



Magnetic separators at Herrang.

The Gröndal system of separating and subsequent briquetting of the fine concentrates is without doubt a very efficient process in the treatment of ores which require much grinding, such as the banded Temagami jaspilytes and the siliceous ores of the Hutton range in Ontario. For this reason a fuller description of the process may be of interest. The method of wet separation is shown in the description of the Lebanon plant contained in this report. But as at Lebanon the concentrates are nodulized and not briquetted as in the complete Gröndal system, a summary of the Gröndal process will be attempted.

Concentrating by the Grondal Process

The scheme of treatment is briefly as follows:—

(1) The ore is crushed dry to about ½ inch cube or thereabouts

(2) Wet treatment in a Gröndal ball mill, which reduces the ore to from 10- to 100-mesh, as may be found necessary.

(3) The ground pulp is passed through a Gröndal magnetic separator, where the non-magnetic particles are removed.

(4) The concentrates are pressed into briquettes and heated in the Gröndal briquetting kiln, from which they issue as hard, porous, easily reducible, ferric oxide briquettes, with a minimum percentage of sulphur. Any of the standard rock breakers may be used for preliminary crushing. Latterly, the heaviest Blake or Gates type of crushers has been introduced, thus throwing less work on the ball mill's.

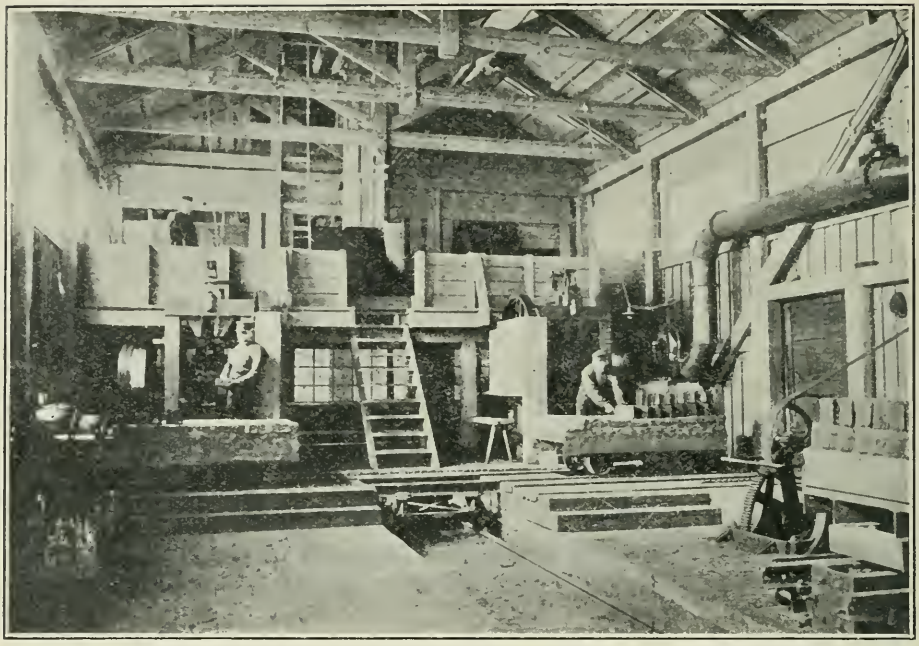
When the ore is of suitable character the use of magnetic cobbing machines is advised, to get rid of such pieces of gangue as contain little or no iron. This reduces the amount of ore to be handled in all subsequent operations per ton of product.

The broken ore is conveyed and distributed to the feed hoppers of the Gröndal ball mills. The feeding arrangement consists of an ordinary roller feeder driven at uniform speed and so constructed as to admit of accurate feed. The ball mills are hollow cylinders 4 feet in diameter and 4 to 8 feet long. They are reinforced with steel ribs and lined with manganese steel or other steel alloy of good wearing quality. The ends are of cast iron with suitable openings provided with a screen at the discharge end. The degree of fineness of the ore is regulated by varying the amount of water introduced into the mill. The mill is charged with about two tons of chilled cast iron balls of about six inches diameter, and it is found that working with ores of average hardness, the consumption of iron, represented mainly by the wear on the balls, amounts to about 2 pounds per ton of ore treated. The mills require from 20 to 25 horsepower each, make from 25 to 30 revolutions per minute, and grind from 50 to 100 tons of ore per 24 hours, depending on the fineness desired. The latest practice is to grind rather finer than was first thought necessary, the practical effect being a higher percentage of recovery and a higher iron content in the concentrates.

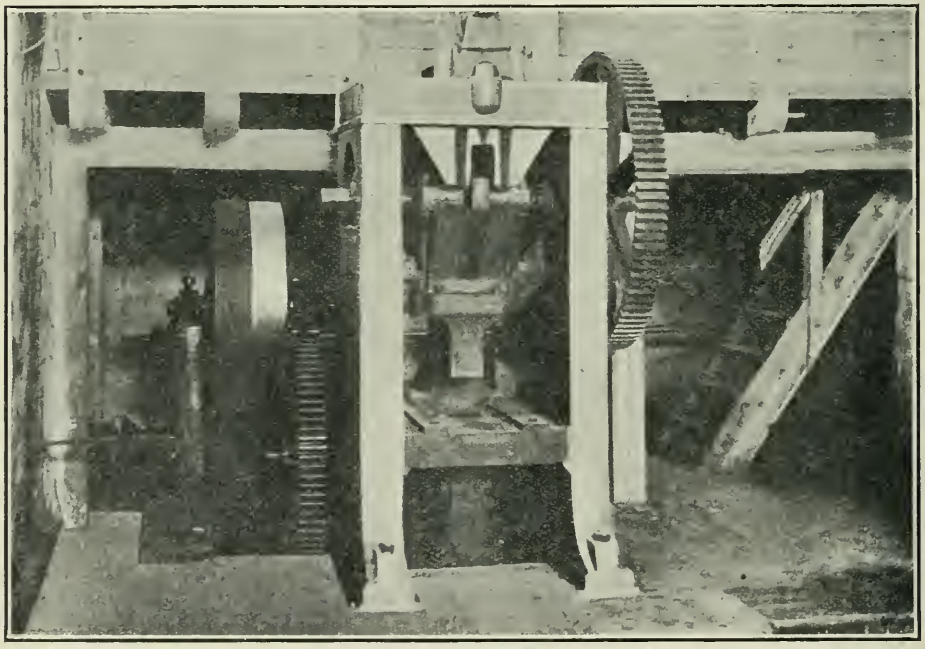
From the ball mills the pulp is sent to the magnetic slimer previously described, or if the amount of slimes is not large, it may go direct to the separators, of which any desired number may be used singly or in pairs as required by circumstances.

The concentrates from the separators are highly saturated with moisture, which in the more recently built plants is eliminated by water separators, consisting of shaking shoes which allow the water to flow away over the further end of the shoe. The partially dried concentrate is then conveyed to the briquetting plant, which consists of a set of drop presses.

The briquetting presses have a drop of 6½ to 7½ inches, the briquettes receiving three blows from a falling weight of about 1,800 lbs. The briquettes may be of various sizes, but are usually made 6 x 6 x 3 inches, and weigh from 8 to 10 pounds each. The pulverized concentrate is pressed into briquettes without any binding material whatever, the contained moisture being sufficient to hold them together



Briquetting plant at Herrang.



Briquetting press.

while they are being removed from the press and taken to the furnace. Each press requires three electric horsepower, and will make from 500 to 750 briquettes per hour. The life of the die plates has been increased considerably, in the latest type of press. At Cwmavon, working pyrite residues, a single set is good for about 500 tons of briquettes.

The Grondal Furnace

To quote from Mr. Bennie:

The briquettes are taken from the press and placed on furnace cars. These are made of iron and covered with fire brick. Along each side of the car is a deep flange which dips into a channel filled with sand placed along the sides of the furnace, thus forming a gas-tight seal. The ends of adjacent cars are fitted with a groove and projecting rib respectively. By this means the surface of the car forms a gas-tight partition and thus prevents the lower portion of the cars, frame, wheels, etc., from becoming heated. The cars measure 3 ft 6 in., and hold from 15 to 16 hundredweight of briquettes arranged on edge in two tiers.

The furnace is fired by gas derived preferably from gas producers, although blast furnace gas can be used. The combustion chamber is situated about one-third of the length from the intake end. The air needed for combustion is introduced below, traversing the row of cars, thus helping to keep the wheels and framework cool, and at the end of the furnace, is diverted to the top of the row of cars, traversing the burnt briquettes, cooling them, and becoming itself heated before reaching the combustion chamber. The products of combustion pass over the entering cars, assist in drying and heating the briquettes, and finally escape through a stack at a temperature of only 150 deg. The furnace being thus constructed on the regenerative principle, has a very good thermal efficiency. Radiation is small, the chief loss of heat being due to the evaporation of the water contained in the briquettes (5 to 7 per cent.) A car of finished briquettes is drawn about every half hour, depending somewhat on the degree of desulphurization required. Recently, furnaces have been arranged so as to give a continuous movement to the cars, increasing the capacity of the furnace considerably.

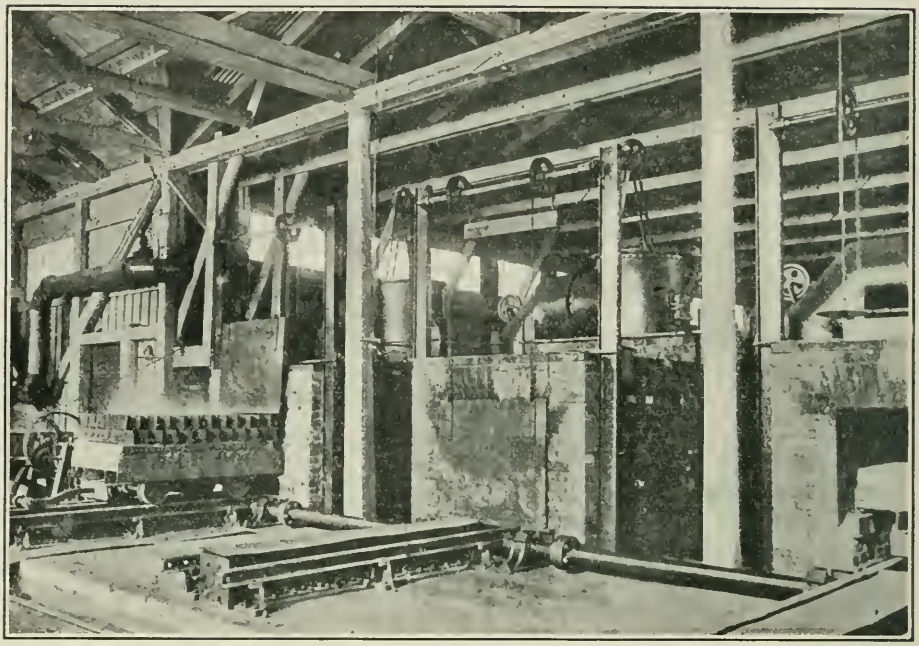
The temperature in the combustion chamber of the briquetting furnace reaches 1,300 deg. to 1,400 deg C. At this heat the particles agglutinate sufficiently to form a firm, hard briquette, able to stand rough handling and long transport. The briquettes though hard, are very porous, and are consequently far more easily reduced in the blast furnace than ordinary lump ore. The briquette made from Herrang ore has a porosity of 23.9 per cent. of its volume.

The output of one furnace varies from 30 to 80 tons in 24 hours, according to the class of ore used, and the degree of desulphurization required; for in addition to its mechanical action this furnace acts as an exceptionally efficient calciner for removing practically all of the sulphur.

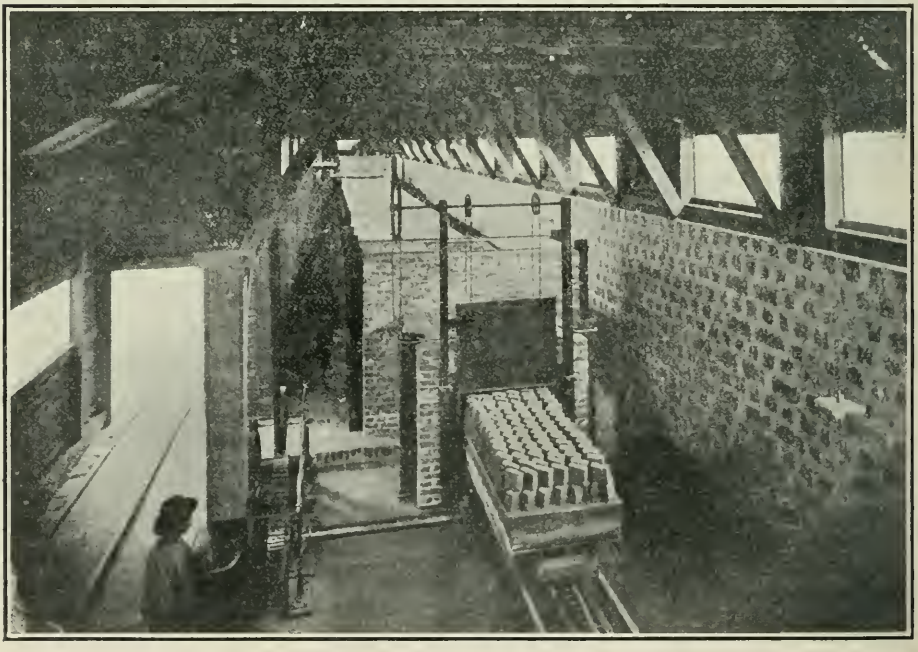
The original briquetting furnaces and cars were one metre wide. It has been found that this may be increased to 1.5 metres without materially increasing the investment. The result of this change is to add 50 per cent. to the daily production of the furnace, approaching the tonnage produced by the nodulizing kiln, and it is expected that the low fuel consumption obtained in the one-metre furnace, will be still further reduced in the wider furnace.

The Gröndal briquette does not contain any added binder, and in the case of magnetic oxide concentrates, the particles are more or less completely peroxidised, owing to the free supply of air entering the furnace during the process of burning the briquettes. Such peroxidised ore (corresponding to hematite) is more easily reduced in the blast furnace than ordinary raw magnetite, and a certain fuel economy is effected thereby.

Briquettes made by this process from pyrites residues and purple ore have proved to be satisfactory in the blast furnace and open hearth steel furnaces. At Cwmavon, pyrites residues containing 2 to 4 per cent. sulphur are being successfully treated by this process. This fact may be of interest to manufacturers of sulphuric acid in Ontario, who are accumulating large piles of their waste material, which if briquetted and burnt as described, would prove a valuable by-product. In South Wales the pyrites residues briquettes command from $5.50 to $6.35 a ton delivered, according to cost of transport; these briquettes contain about 62 per cent. iron and only 0.044 per cent. of sulphur.



Range of Briquetting Furnaces at Herrang.



Briquetting Furnace at Guldsmedshyttan, Sweden.

In Sweden and Norway there exist large quantities of magnetic ores, very similar to our own Ontario magnetites, that contain anywhere from 30 to 60 per cent. of iron, with varying amounts of sulphur and phosphorus. In order to utilize these low grade deposits magnetic concentration is employed on a large scale, and it is stated that every operating company has been financially successful from the start.

Results of Grondal Methods of Concentrating and Briquetting

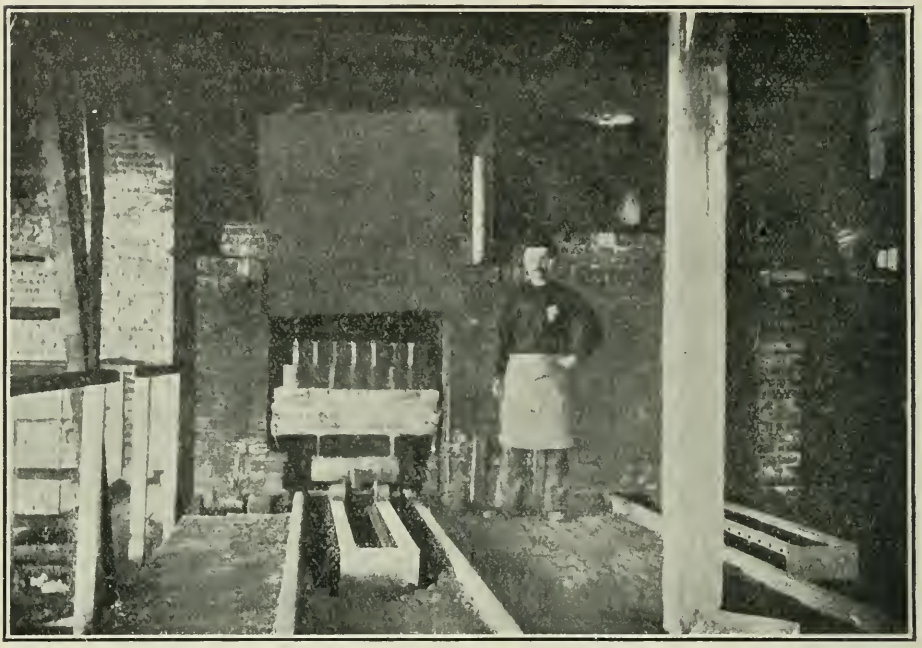
Works.	Crude Ore.			Concentrates.			Tails.	Briquettes.		
	p. c. Fe.	p. c. S.	p. c. P.	p. c. Fe.	p. c. S.	p. c. P.	p. c. Fe.	p. c. Fe.	p. c. S.	p. c. P.
Bredjsö	35.0	0.15	0.010	67.2	0.050	0.004	6.9	65.1	0.020	0.004
Flogberget	27.3	0.31	0.003	67.4	0.040	0.003	7.1	65.3	0.007	0.003
Guldsmedshytten	50.7	3.0	0.003	70.1	0.5	0.002	10.2	68.2	0.010	0.002
Helsingborg (Purple ore)	60.6	0.17						60.6	0.023	
Herräng	40.2	1.21	0.003	67.3	0.170	0.002	6.4	65.5	0.003	0.002
Ijulsjö	39.7	0.12	0.008	67.1	0.035	0.004	10.1	65.2	0.015	0.004
Loileå	58.2	0.110	1.230	71.1	0.015	0.005	12.0	69.3	0.005	0.005
*Riddarhyttan	52.8	0.025	0.006	64.2	0.017	0.003	7.4			
Salangen	35.7	0.039	0.23	69.3	0.019	0.009	4.9			
Strässa	46.8	0.030	0.015	69.2	0.015	0.003	6.1	67.1	0.005	0.003
Stripa	40.3	0.030	0.010	67.1	0.020	0.002	12.2	67.1	0.005	0.002
*Sydvaranger	38.0	0.066	0.030	68.3	0.026	0.014	5.5	68.0	0.006	0.014
Uttersberg	34.5	0.020	0.024	62.6	0.020	0.016	9.3			
*Vigelsbro	35.2	0.45	0.026	64.6	0.089	0.002	6.7			
Cwmavon (Purple ore)	64.43	1.65	0.019					61.5	0.044	

* Under construction.

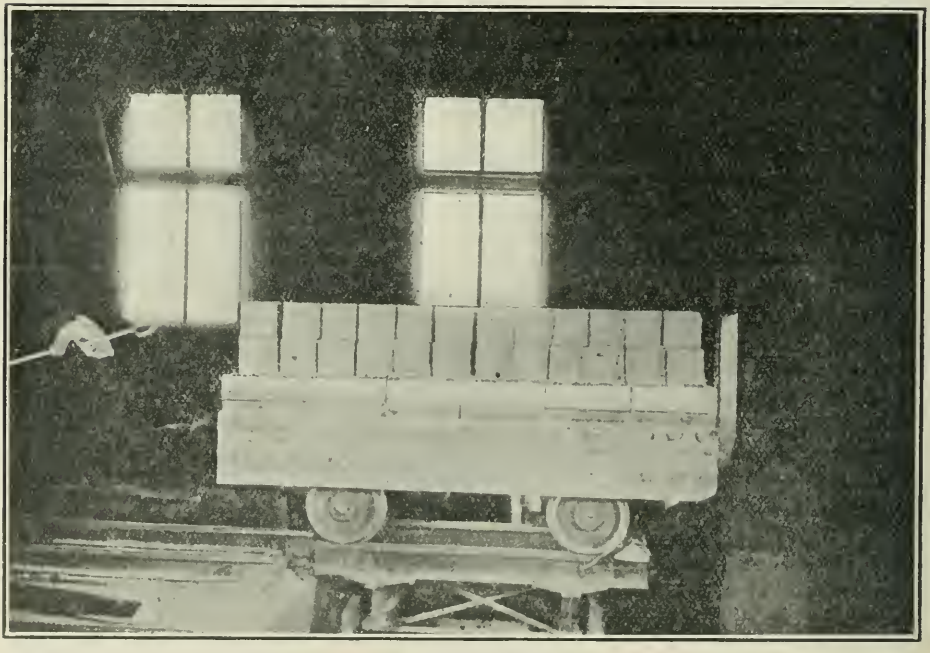
Most of these low grade Norwegian and Swedish ores are very fine grained, requiring much grinding in order to effect an efficient separation, and to keep the iron in the concentrates above 60 per cent. Under such conditions some method of wet separation must be employed. The Gröndal system is extensively used, and is giving good results. In The Engineering and Mining Journal of 11th May, 1907, a list is published of 19 magnetic separating plants actively in operation in Sweden, in 12 of which the Gröndal apparatus is employed.

Following is a list of the works in operation and under construction, in which the Gröndal system is in use or is to be installed. The table shows the annual production.

Works.	Tons Ore Treated.	Tons Concentrates.	Tons Briquettes.
1. Strässa	150,000	75,000	60,000
2. Bredsjö	40,000		20,000
3. Herräng	60,000		30,000
4. Guldsmedshyttan	90,000	45,000	30,000
5. Uttersberg	24,000		12,000
6. Flogberget	50,000		24,000
7. Loileå	60,000		50,000
8. Sandvikens			12,000
9. Horndal			12,000
10. Helsingborg			50,000
11. Cwmavon (Wales)			36,000
12. Alguife (Spain)			40,000
13. Lebanon (United States of America)	200,000	100,000	
Under Construction.			
1. Heliefors	20,000		10,000
2. Vigelsbro	20,000		10,000
3. Salangen	300,000		100,000
4. Sydvaranger	1,200,000		600,000
5. Traversella	50,000		25,000
6. Riddarhyttan	20,000		10,000
Total			1,131,000



Charging car load of purple ore briquettes, Helsingborg.



Car load of burnt purple ore briquettes at Helsingborg.

Where tons of concentrates are not given, the whole output is briquetted. Where only briquettes are given, concentrates or fine or purple ores are used.

In order to obtain accurate information as regards the process of magnetic separation, the writer was instructed to visit several of the large plants in the United States. Accordingly trips were made to the dry separating mills at Mineville and Chateaugay, New York State, and to the plant of the Pennsylvania Steel Company at Lebanon, Pa., where the Gröndal wet system of concentration is employed.

Magnetic Concentration at Mineville, N. Y.

On the eastern side of the Adirondack mountains, and within six miles of Port Henry on Lake Champlain, are situated the historic Mineville group of mines. These mines have been operated since 1846 and have shipped about 15,000,000 tons of ore to date. The largest quantity of rich ore as yet mined in one place in the United States was obtained from the Lover's pit opening on Barton Hill near Mineville. This pit yielded 40,000 tons of magnetite that averaged 68.6 per cent. of iron, with many car loads at 72 per cent.[26] and at the present time the concentrates being produced by Witherbee, Sherman and Company are probably the richest ores sold in America.[27] Being in fine particles they are more easily reduced in the blast furnace than the ordinary lump magnetite, while not nearly so fine as the Mesabi ores from Lake Superior.

The most important of the various ore bodies operated by Witherbee, Sherman and Company are known as The Old Bed, comprising the Joker and Bonanza mines, and The New Bed and Harmony mines. The Old Bed ores are high in phosphorus, carrying from 1.35 to 2.25 per cent., with an approximate iron content of 60 per cent. The New Bed and Harmony ores are low in phosphorus and vary in iron from 40 to 69 per cent. All of the above ores have a more or less coarse crystalline structure, that admits of easy disintegration and consequently very efficient concentration by magnetic separation. The gangue associated with the ores consists of apatite, silica and hornblende, the proportion of gangue matter varying considerably in the ores from the several mines. The apatite varies in color and in size of crystals, and when these crystals are of a deep red color they develop sufficient magnetism to carry them into the iron concentrates. They also have a tendency to adhere to the crystals of magnetite, much more so than the yellow or green varieties, which display much less magnetic susceptibility.

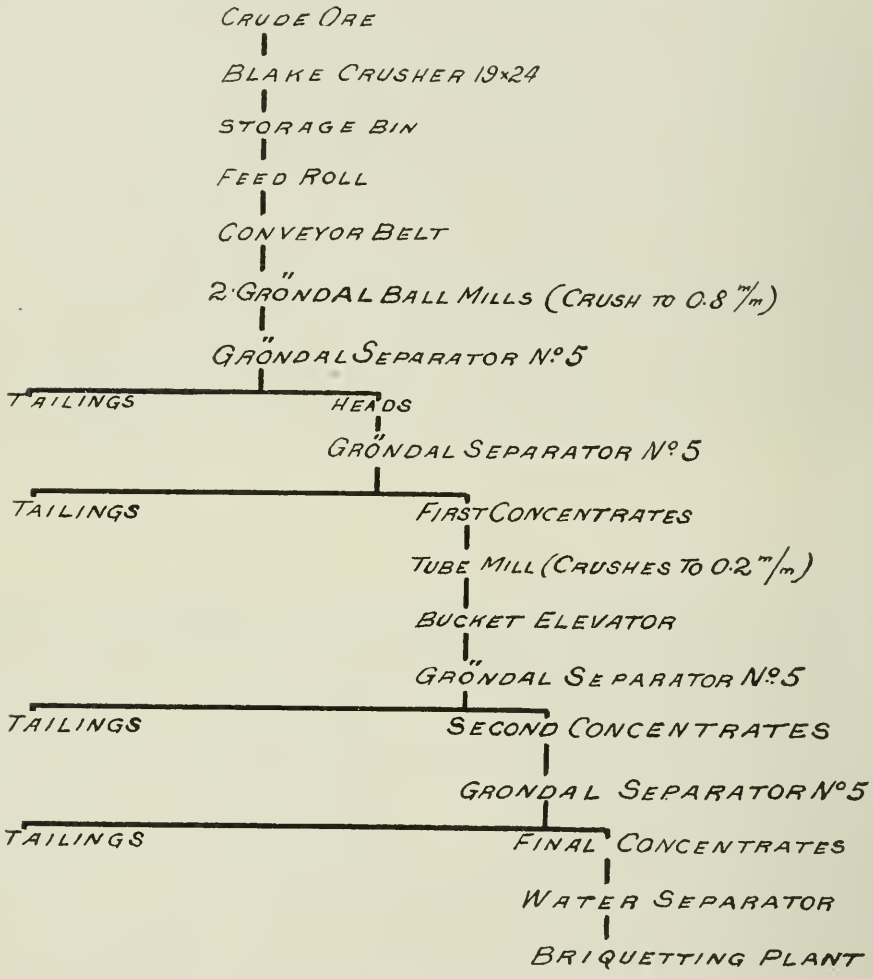
Magnetic concentration is carried on in the two mills shown in the accompanying photograph, the upper or No. 2 mill treating the high phosphorus ores from the Old Bed mines, and the lower or No. 1 mill treating the crude ores from the Harmony mine and also the tailings from a magnetic cobber which is installed at the Harmony shaft.

The cobbing plant at the Harmony shaft was erected to concentrate the ore in large sizes, the product being a coarse magnetite running about 61 per cent. in iron. This is shipped directly for blast furnace use, to mix with the finer concentrates. The cobbing plant is very simple and may be described as follows:—The mine skip dumps into a chute feeding a 30 x 18-inch Blake crusher, which breaks the ore down to 1½ inch size; it is then conveyed to a Ball and Norton single drum magnetic separator, the cobbed product and tails being taken by two Robins belt conveyors to storage bins. The cobbed ore, as already stated, is shipped direct, and the tailings trammed to No. 1 mill where they are re-treated by finer grinding and secondary concentration.

[26] Ore Deposits of the United States and Canada, by J. F. Kemp, p. 85. [27] The Iron Age, December 17, 1903.

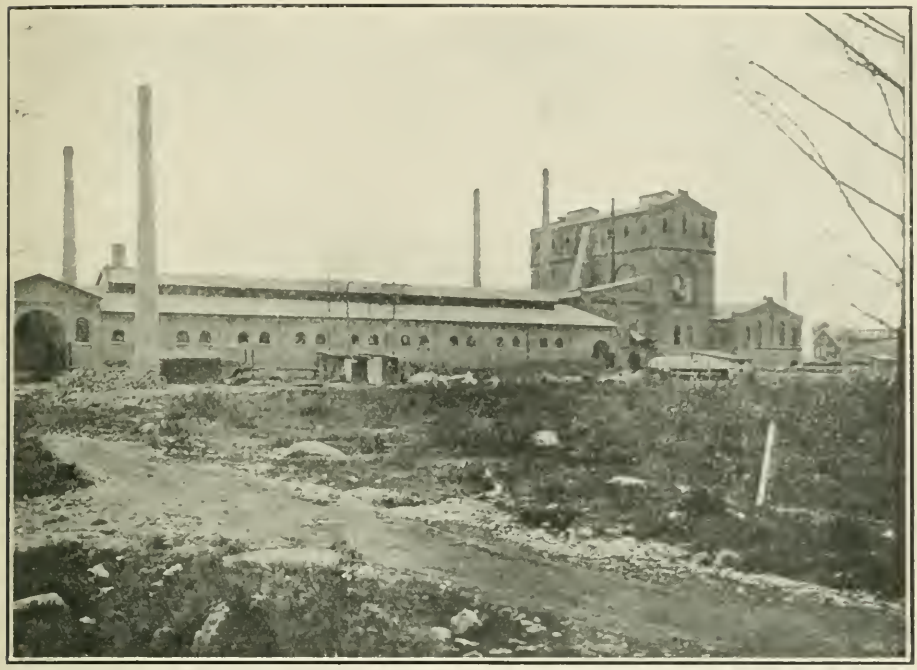
No. 1 Mill

At No. 1 mill the crude ore from the Harmony mines and tailings from the cobbing plant are dumped and weighed, passing into a storage bin which feeds a 30 x 18-inch Blake crusher, and are afterwards screened to ¾ inch size, the fines passing to a dryer, the oversize going to a Gates crusher size H., then joining the stream of fines, all go to the dryer. This is a square, vertical brick stack, with cast iron tees arranged in alternately staggered sections: the ore being fed in at the top

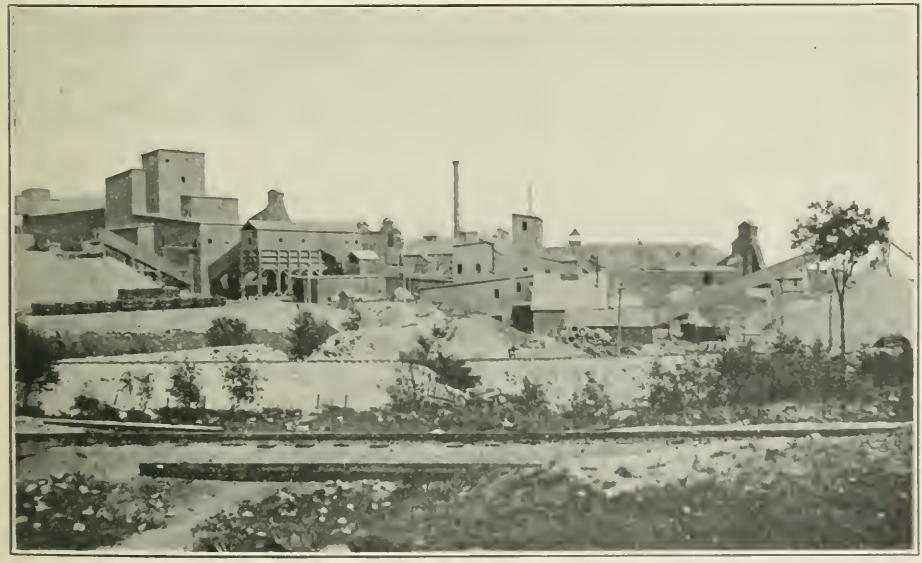


Flow sheet of Grondal concentrating plant, Flogberget, Sweden.

falls over the bars, admitting free circulation of hot air and gas throughout the mass. At the bottom, the dryer is connected with an outside coal-fired furnace, the product of combustion passing over a bridge wall into the stack. The ore discharged from the bottom of the dryer is then fed to a Ball and Norton single drum magnetic cobber, the heads passing to the shipping bins and the tails being re-ground in a pair of 40 x 15-inch Anaconda rolls, thence elevated and passed over a 3-8-inch tower screen. The undersize from the tower screen goes to two Ball and Norton belt separators (of the type already described). Concentrates from these machines are carried by belt conveyor to the shipping bins, while the tailings are reconcentrated by



General view of Herrang Iron works, Sweden.



No. I. and No. II. Mills, Witherbee Sherman Company, Mineville, N.Y. Combined mills handle 1,600 tons crude ore in 10 hours, producing 1,360 tons of concentrates.

another pair of similar separators, operating on a heavier electric current, and removing the last of the magnetite down to the economical point, the tailings going direct to the dump. The oversize from the tower screen is passed through a pair of 36 x 14-inch Reliance rolls, and final concentration is made by two other Ball and Norton belt separators, the heads product being carried to the shipping bins and the tails joining the waste from preceding operations are carried to the dump by a 20-inch Robins belt conveyor.

The power for No. 1 mill is furnished by four 50-h.p. Crocker-Wheeler direct current motors, and a single 75-h.p. General Electric induction motor. The conveyors and light machinery are run by belting from the motor room, which is built as a part of the mill but divided off in order to keep out dust and grit.

The results of concentration at No. 1 mill are shown by the following analyses[28]:—

	Iron per cent.	Phosphorus per cent.
Crude Harmony Ore	50.26	0.292
Harmony Concentrates	64.10	0.133
Harmony Tailings	13.97	0.877

Tailings from this mill are used for the manufacture of concrete blocks. A large new general office has been erected of this material at Mineville, and several other substantial buildings have been made of these concrete blocks.

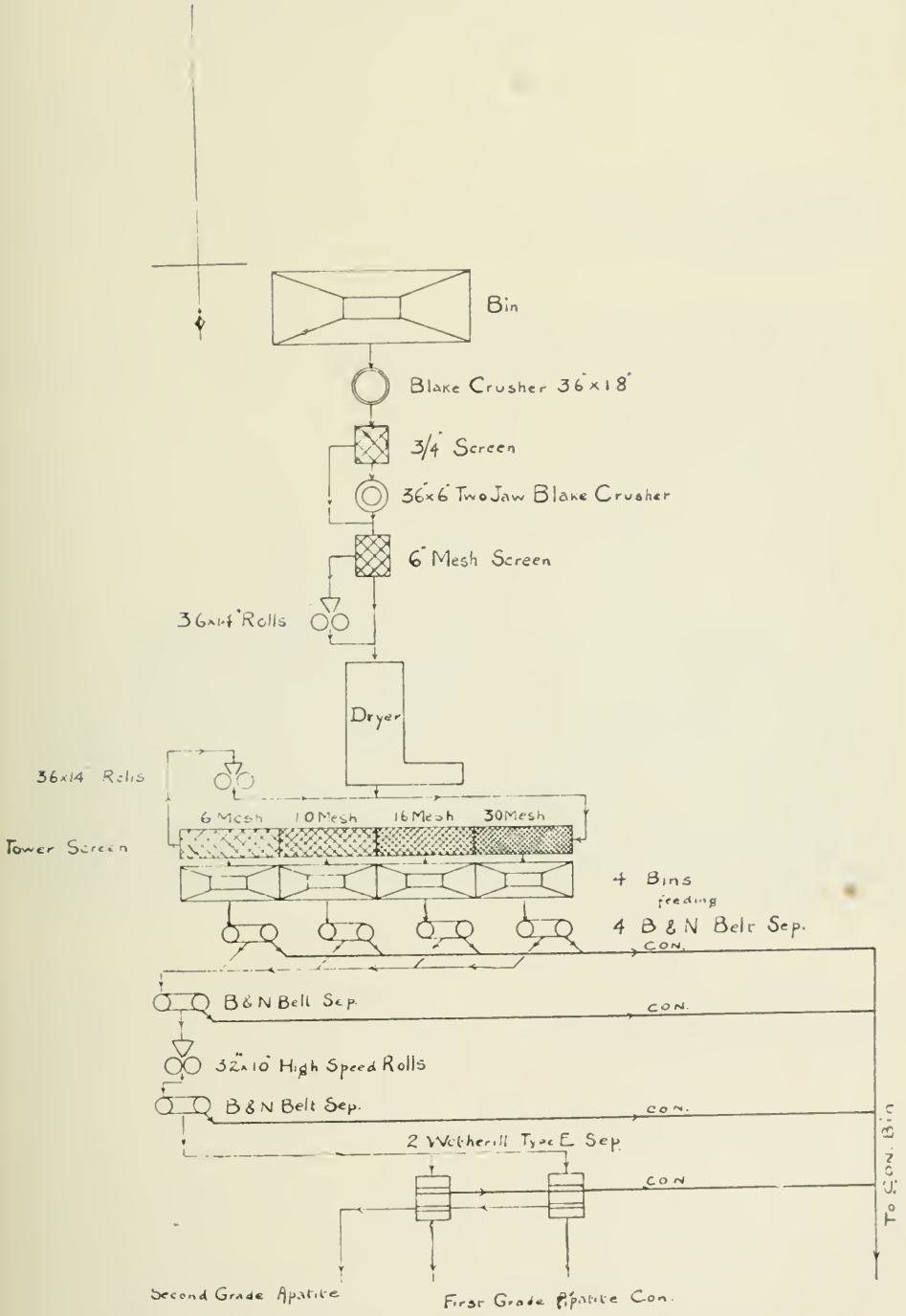
No. 2 Mill

No. 2 mill treats the high phosphorus Old Bed ores, and although the general treatment is similar to that described for No. 1, there are several interesting features that invite attention.

A flow sheet of this mill is shown, which brings out the essential points of difference between it and No. 1. The ore is first crushed to 1½-inch size in a 30 x 18-inch Blake crusher and then passed over a ¾-inch screen, oversize being broken to ¾-inch by a 36 x 6-inch two jaw Blake crusher, the undersize and the crushed product going to a six-mesh screen. The oversize from this screen is fed to a set of 36 x 14-inch Reliance rolls and is then united with the undersize, and all passes to a dryer of the same kind as described in No. 1 mill. From the dryer the ore is elevated to a tower screen of 288 square feet of screening area. This screen is divided into equal sections of 30-, 16-, 10- and 6-mesh, the finest mesh being of course at the top. The product of these screens is delivered to four separate bins, the oversize, passing to a set of 36 x 14-inch Reliance rolls, is crushed and then returned to the main stream from the dryer. Under each bin is placed a Ball and Norton belt separator, the concentrates from these machines going direct to the shipping bins. The tailings are re-treated by a single belt machine operating with a slightly stronger electric current, the concentrates joining the main stream from the first four separators, and the tailings being ground in a pair of 32x10-inch Traylor high speed rolls, feeding to another Ball and Norton belt separator. The concentrates are again diverted to the main stream, the tailings passing to two Wetherill type E. magnetic separators. The Wetherill machines make three products, first, iron concentrates; second, tailings consisting of hornblende and some of the magnetic apatite mentioned above, and third, non-magnetic apatite with silica in pure white grains. The iron concentrates are conveyed to the iron concentrate bin, and the apatite cocentrates and tailings, both valuable products, are conveyed to separate bins.

Power for No. 2 mill is supplied by three 60-h.p. General Electric induction motors for the heavy machines, and one 10-h.p. General Electric induction motor for the conveyors running to the shipping bins. All motors are protected as much as possible from grit and dust.

[28] All analyses taken from The Engineering and Mining Journal, June 23rd, 1906.



Flow sheet of No. 2 mill; Witherbee Sherman & Company, Mineville, N.Y.

The three products from No. 2 mill are magnetite or iron concentrates, first grade apatite concentrates, and second grade apatite or poultry grit.

Analyses of the crude ore and resulting products are as follows:—

	Iron. p.c.	Silica. p.c.	Phos. p.c.	Lime. p.c.	Sulphur. p.c.	Bone Phosphate. p.c.
Crude Old Bed Ore	59.59	.....	1.74	.....	.....	.....
Old Bed Concentrates	67.34	2.20	.675	3.14	trace.	.....
First Grade Apatite	3.55	18.61	12.71	.....	.....	63.55
Second Grade Apatite	12.14	.....	8·06	.....	.....	40 30

A fourth product made occasionally for special purposes is that known as re-treated concentrates. This is an exceptionally pure magnetite which will average 71.85 per cent. in iron. (Theoretical magnetite carries 72.40 per cent. of iron.) One shipment of this material has been made to the General Electric Company for use in their magnetite lamp.

The combined capacity of the two mills is 1,600 tons of crude Old Bed ores in 10 hours, yielding 85 per cent. or 1,360 tons of concentrates. Treating Harmony and New Bed ores, the mills will handle 1,200 tons per 10 hours, of which 77 per cent. or 924 tons is recovered as concentrates. About 65 per cent. of the finished product is larger than 10-mesh, which makes it a very desirable material for blast furnace use.

The economical recovery is less than the point to which recovery might be carried, and while Harmony and Old Bed concentrates run respectively, 60 and 65 per cent. iron, the iron content could be raised 5 or 10 per cent. if desired; but if concentration is carried beyond the averages given above, the additional iron saved would be obtained at the expense of the granular character of the concentrates. That is, finer crushing would be necessary, and the resulting concentrates would then not be so desirable from the furnaceman's point of view. This point is well brought out by the frequent screening of the material during its passage through the mills, the object being to avoid pulverization as far as possible. Much experimenting to determine the economical point of recovery has been carried on by Mr. S. Norton, general manager of the plant, to whom thanks are due for information and courtesies received.

Cedar Point Furnace, Port Henry, N.Y.

At Port Henry the Cedar Point furnace is operated under lease by The Northern Iron Company, and as Mineville ores are almost exclusively used at this plant, a few notes on the furnace practice may be of interest.

Most of the output is basic pig iron, of which about 5,000 tons are produced monthly on an average coke consumption of 2,300 lbs. per ton of iron. A typical analysis of the iron is as follows: Silicon, 0.63; Sulphur, 0.008; Phosphorus, 0.85.

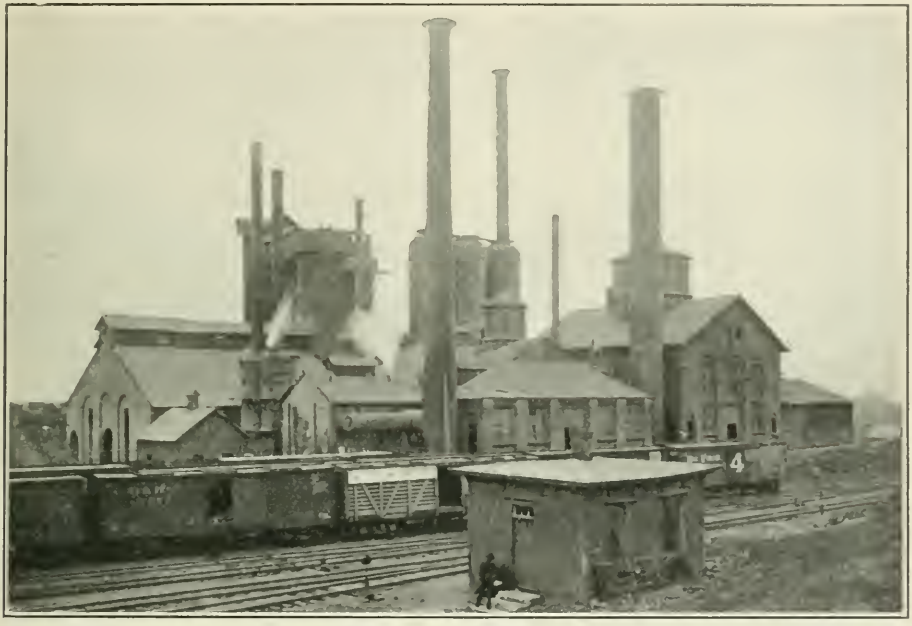
The furnace is 69 feet 3 inches in height by 17 feet diameter at the bosh, and 10-foot hearth, with 11 feet 6 inches at the stock line. The hearth is pierced for 9 tuyeres, the blowing engines supplying 18,000 cubic feet of air per minute, which is heated to approximately 1,000 degrees Fahrenheit, the average blast pressure being 8½ pounds per square inch. The ore charge consists of 13/16 to 15/16 of concentrates, the balance of the charge being Old Bed crude ore, and is delivered to the furnace from a double section bell, which is a modification of the F. Firmstone pattern. Both the outer and inner sections of this charging bell are adjustable through certain limits. At the time of my visit the outer section or ring had a drop of 24 inches, while the drop of the central portion was adjusted to 6 inches. This arrange-

ment is found to work satisfactorily, giving a uniform distribution of fine and coarse ore at the stock line, and by means of the adjustments before mentioned this distribution can be varied at will.

The stock is charged as follows:—

Coke Charge, approx.....4,800 pounds.
Ore Charge, approx.....8,200 "
Limestone Charge, approx ..... 2,460 " varying between 28 and 32 per cent. of the ore charge.

The slag made is rather basic, containing approximately silica 34 per cent., alumina 12 per cent., and 12 to 14 per cent. of magnesia; the balance may be considered as practically lime. On account of the rich ores, low in sulphur, the furnace is run rather dry with respect to the amount of cinder made, the slag volume being very low.



Port Henry furnace, N.Y., where Mineville concentrates are used.

The furnace works smoothly with practically no tendency to hang or slip, and the manager Mr. F. E. Bachman, to whom thanks are due for most of this information, has no difficulty in keeping the output at 180 to 200 tons of iron daily.

Concentration Works at Lyon Mountain, N.Y.

The Lyon Mountain or Chateaugay mines are situated in the northeast corner of the Adirondack mountains, New York State, about 36 miles west of Plattsburg on the Delaware and Hudson Railway, and are operated by the railway company.

The mines have been worked since 1867, and the total production of ore up to the present time may be placed approximately at 4,100,000 tons. Some years ago a considerable amount of the run of mine ore was shipped, but at the present time the total output of the mines is submitted to magnetic concentration and shipped only as concentrates.

The character of the ore varies considerably, but the average grade consists of about equal proportions of magnetite and gangue minerals, the latter consisting chiefly

of feldspar, quartz, and pyroxene. Phosphorous and sulphur are both low, and as the ore is fairly coarse-grained (although not as coarse as the Mineville ore) the problem of concentration is not difficult. The iron contents will vary between 25 and 50 per cent., but the average will run 32 per cent. or thereabouts.

There are two mills at Lyon mountain, the old and the new. The old mill was designed for ordinary wet concentration about 20 years ago, but was afterwards re-built and arranged for dry magnetic concentration. Many changes were made, and new machinery was added at various times until the operation of the mill became very complicated, with high costs for power and repairs. When the new mill was built in 1905-1906, operation of the old plant was discontinued.

The new mill, designed by the Allis-Chalmers Company of Chicago, who also supplied nearly all of the machinery, is built of Georgia pine on solid concrete founda-

Concentrating Mill at Lyon Mountain, N.Y. Mill handles 1,800 tons crude ore per 24 hours, and produces 500 tons concentrates,

tions carried up from bed rock. An exterior view of the mill is shown, and it can be seen that the buildings are constructed on a large scale.

The capacity of the plant is from 1,000 to 1,200 tons of crude ore per 24 hours, producing on an average 500 tons of concentrates that have an iron tenor of over 60 per cent. As the ore must be crushed down to ¼-inch to obtain the best results in separation, the crushing machinery is of extensive and costly design. The ore is concentrated dry, and the Ball and Norton double drum magnetic separators are used exclusively. These separators are giving good results, as the accompanying analyses will show. Each machine is supposed to have a rated capacity of 15 to 20 tons of crude ore per hour. A description of this type of magnetic separator is given elsewhere in the report.

Analyses of Chateaugay Crude Ores, Concentrates and Tailings

	Crude Ore. per cent.	Concentrates. per cent.	Tailings. per cent.
Ferric Oxide	31.48	60.128	4.57
Ferrous Oxide	15.81	28.850	3.60
Manganous Oxide	0.115	0.107	0.124
Silica	33.16	6.880	58.56
Alumina	4.90	0.900	10.72
Lime	4.96	0.660	8.24
Magnesia	2.10	0.450	4.06
Phosphoric acid	0.043	0.023	0.064
Sulphur	0.027	0.022	0.035
Titanic acid	0.427	0.417	0.457
Ferrous Oxide in gangue	2.83	0.257	4.76
Potash	1.408	0.494	1.61
Soda	2.283	0.777	2.99
Moisture	0.25	0.040	0.12
	99.793	100.005	99.910
Total iron	36.50	64.72	9.70
Iron in magnetite	34.30	64.53	6.00
Phosphorus	0.019	0.010	0.028
Manganese	0.089	0.083	0.096
Titanium	0.256	0.250	0.274

The mill consists of three sections each of which is operated separately. First, crushing and drying; second, screening and grinding; and third, magnetic concentration. Each section has a large storage bin, and in case of a break down in any part of the mill, it is possible to keep the other sections running. A sketch diagram of the process is shown and by reference to the numbers attached, the passage of the ore can be followed through the mill.

Crushing and Drying

The crude ore is brought from the mines in 6-ton side or bottom dump cars, and after being weighed is discharged into a storage pocket holding 800 tons. From the bottom of this pocket the ore passes to a 24 x 30-inch Blake jaw crusher. This crusher is one of the largest built, and weighs 31 tons. The crushed ore from the Blake reduced to 5-inch size is then passed over a 1½-inch grizzly to a No. 7 K. Gates gyratory crusher, which delivers it in 1½-inch size to a conveyor belt which also receives the fines that passed the grizzly, and carries all to 40 x 30-inch enclosed rolls of the Allis-Chalmers Anaconda type. These rolls crush the ore to ¾-inch and feed to a bucket elevator that conveys the ore to the top of a vertical dryer of a modified Rowand type. The ore drops through the dryer a distance of 40 feet, between T iron bars that are placed in staggered position, meeting the hot gases from the coal fired furnace below, and comes out at the lower end, where it is picked up by another bucket elevator and conveyed to a second storage bin of 300-ton capacity. It should be noted here that this dryer at the time of my visit was not giving satisfaction. The dried ore was hardly warm, notwithstanding the fact that all ore cars in transit from the mines to the mill are covered with canvas blankets to protect the ore from excessive moisture in bad weather.

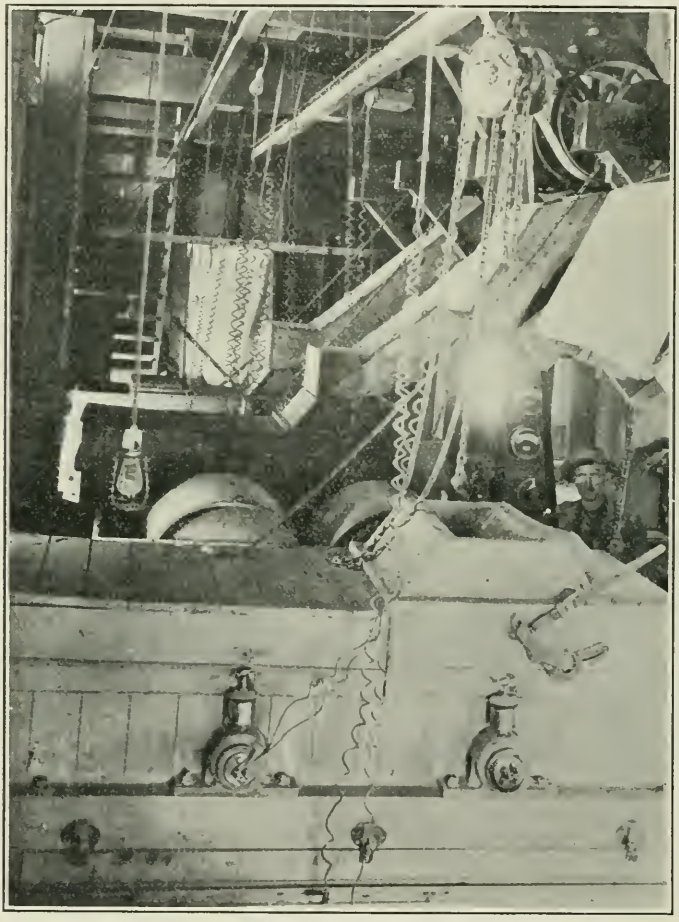
Screening and Grinding

The trommel screens are fed from the second storage bin, the ore passing over ordinary roll feeders. These screens are of the revolving type and are 16 feet long by 4½ feet in diameter; all are driven by bevel gears at the discharge end. Two of the screens are double jacketted, the inner shell perforated with ¾-inch and the

outer with ½-inch taper holes. The two single screens also have ¼-inch perforations. The oversize and ¾-inch material from the double screen, is delivered to two 40 x 15-inch rolls, of the same type as the large crushing rolls, and is then elevated to the single screens, the oversize from these being returned to another pair of 40 x 15-inch rolls, and the undersize elevated to a third storage bin placed above the magnetic separators.

Magnetic Concentration

The fine ore from the bin is fed directly to four primary Ball and Norton separators on the top floor of this section. The middlings and tails are re-crushed in four



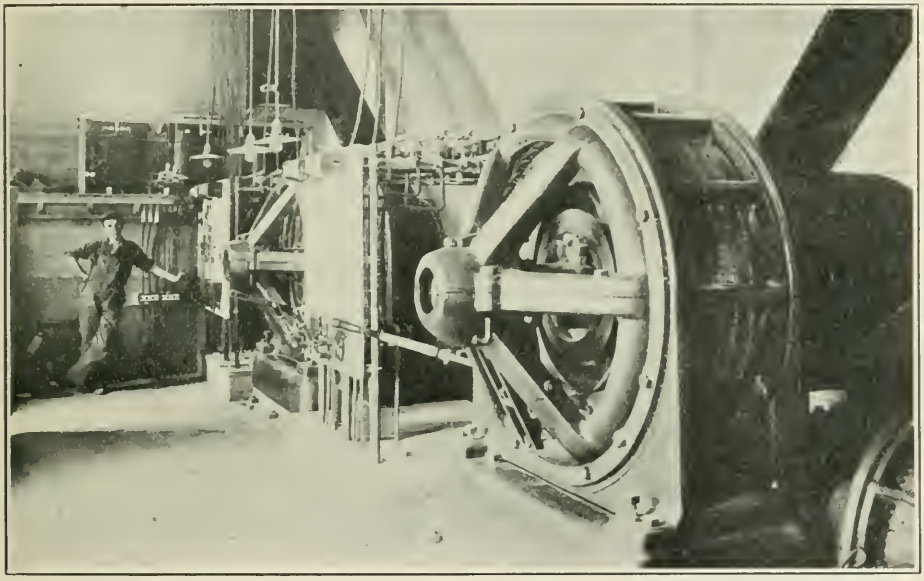
Double drum Ball and Norton magnetic separators in the Lyon Mountain concentrating mill.

sets of small rolls, two grinding middlings and two grinding tailings, and are then retreated in four secondary separators on the next floor below. The middlings from this secondary set are returned by elevator to two of the rolls mentioned above, while the tailings are sent to a final separator where the last of the magnetite is removed. The middlings from this final machine go back through the tailings rolls again, and the final tailings with the final concentrates are conveyed by two parallel belts to the storage pockets.

The speed of rotation of the Ball and Norton drums varies according to the class of ore being treated. Ordinarily, the first drum has a speed of 40 R.P.M. with an

exciting current of 16 amperes, while the second drum is rotated at 120 R.P.M. with an exciting current of 6 amperes, at 220 volts. The following figures are of sieve tests, and show that the concentrates are of nearly uniform mesh from day to day.

1906.	Aug. 4. p.c.	Aug. 6. p.c.	Aug. 7 p.c.	Aug. 8. p.c.	Aug. 9. p.c.	Aug. 10. p.c.
100 mesh	16.9	16.6	17.2	17.8	16.9	14.7
80 "	2.5	2.2	2.5	1.3	2.8	3.1
60 "	7.8	8.4	7.2	7.2	6.6	6.6
40 "	17.5	18.4	19.1	18.7	18.7	18.1
20 "	26.2	26.2	26.6	26.6	26.6	25.9
10 "	23.2	21.6	20.9	21.2	21.9	23.4
Above 10	5.9	6.6	7.5	7.2	6.5	8.2
Total	100.0	100.0	100.0	100.0	100.0	100.0



Motor room in the Lyon Mountain concentrator.

The belts which convey the concentrates and tailings away from the separating section are 20 inches wide and run side by side up a 23½-degree incline to the shipping pockets. The concentrate pocket has a capacity of 600 tons and delivers through bottom chutes directly to the railroad cars below. The tailings are passed over a revolving screen with ⅜-inch holes separating the coarse from the fine grit; the undersize goes to a bin holding 200 tons, and is shipped for use as locomotive sand, being dry, sharp and clean. The coarse tailings are conveyed to the tailings dump and are utilized for railroad ballast, also for making concrete. Many of the dwellings in Lyon mountain are constructed of concrete blocks made from the tailings sand.

The power required for driving the mill is supplied by two 225-h.p., 1,040 volts, 3-phase current induction motors. The current for the magnetic separators is furnished by a 50-h.p. motor generator. When the mill is running it requires about 580 h.p. to keep it operating under full load.

Sixteen men only are required per shift to operate the mill; their occupations are as follows:—

	Per 12 hours.	Per 24 hours.
Dump and weigh crude ore	2 men	4 men
Crushers and rolls	4	8
Magnetic separators	3	6
Fireman for dryer	1	2
Motor room	1	2
Oiler	1	2
Sampling	1	2
Load and weigh concentrates	2	4
Foreman	1	2
Totals	16 men	32 men

For the above information, thanks are due to Mr. J. H. Cartwright, General Superintendent, to Mr. Frank Davies, foreman of the mill, and to Mr. James Brakes, chemist for the company, who supplied the analyses and sieve test data.

A considerable tonnage of the Chateaugay concentrates is shipped to Standish, 5 miles from Lyon mountain, where the Northern Iron Company is operating a small blast furnace, and accordingly a trip was made to this plant in order to ascertain if possible what effect the use of such fine concentrates would have on the working of the furnace.

Tree of the Concentrating Process

Cars from mine deliver ore to (1).

(1) Bin, capacity 800 tons, to (2).

(2) Blake crusher size 24x30, crushing to 5 inch, to (3) and (4).

(3) Grizzly screening to 1½-inch, to (4) and (5).

(4) Gates crusher No. 7 K, crushing to 1½-inch, to (5).

(5) Belt conveyor to (6).

(6) Anaconda rolls 40x30-inch crushing to ¾-inch to (7).

(7) Bucket elevator to top of (8).

(8) Rowand dryer to (9).

(9) Bucket elevator to (10).

(10) Storage bin, capacity 300 tons, to (11).

(11) Two double revolving screens ¾-inch inside, ¼-inch outside, yielding oversize to (12) and undersize to (17).

(12) Two 40x15-inch rolls to (13).

(13) Belt conveyor to (14).

(14) Bucket elevator to (15).

(15) Two revolving single screens ¼-inch, yielding oversize to (16) and undersize to (17).

(16) Two 40x15-inch rolls to (13).

(17) Belt conveyor to (18).

(18) Bucket elevator to (19).

(19) Storage bin feeding to (20).

(20) 4 Ball and Norton double drum separators yielding concentrates to (27), middlings to (21) and tailings to (26).

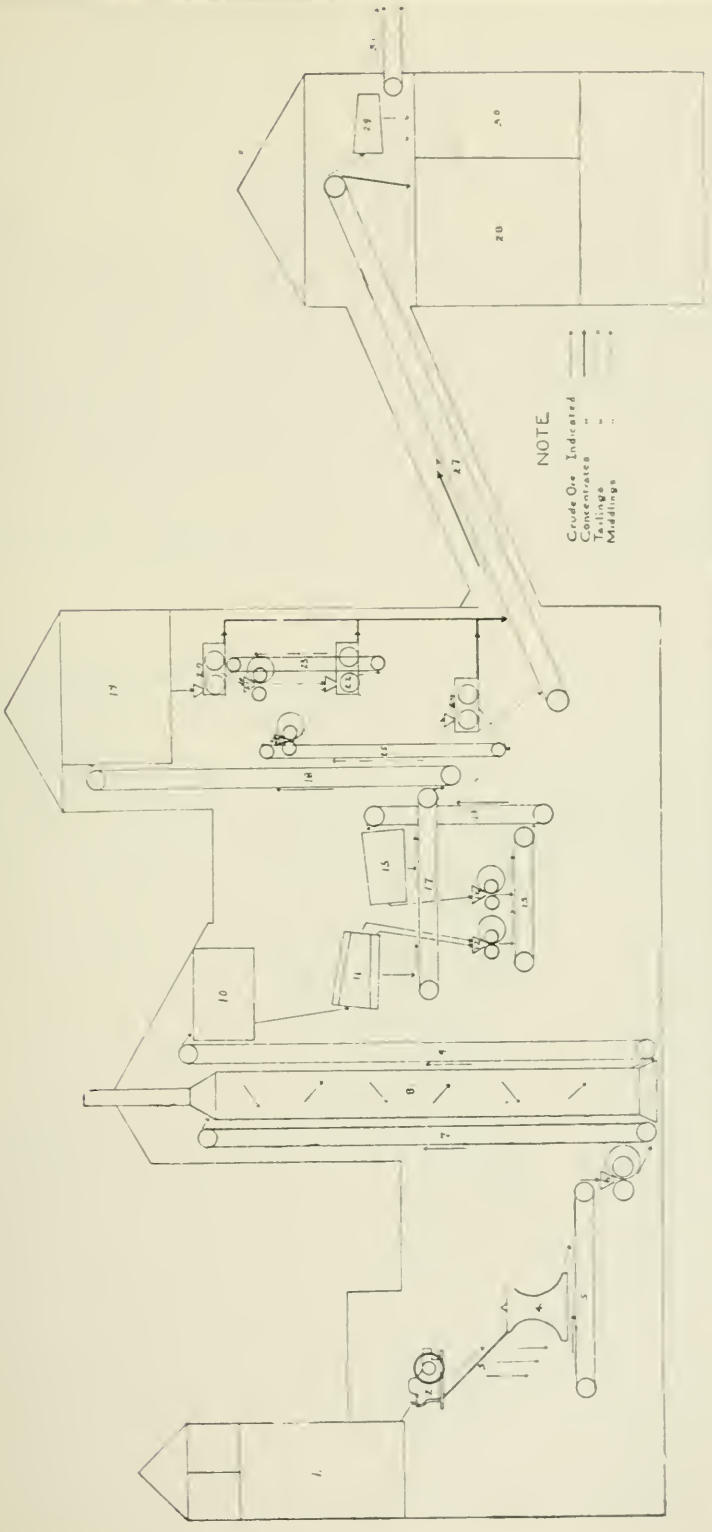
(21) 2 pair small crushing rolls to (22).

(22) 4 Ball and Norton double drum separators yielding concentrates to (27), middlings to (23) and tailings to (24).

(23) Bucket elevator to (21).

(24) 1 Ball and Norton double drum separator, yielding concentrates to (27), middlings to (25) and tailings to (27).

(25) Bucket elevator to (26).



Diagramatic section of magnetic separating mill at Lyon Mountain, N. Y.

(26) Two pair small crushing rolls to (22).

(27) Two parallel conveyor belts, for concentrates to (28) and tailings to (29).

(28) Concentrate shipping pocket.

(29) Revolving screen with ⅛-inch holes, yields locomotive sand to (30) and coarse tailings to (31).

(30) Shipping pocket for locomotive sand.

(31) Belt conveying coarse tails to waste dump.

Standish Furnace, N.Y.

From the accompanying photographs a general idea may be had of the extent of this plant, and therefore no detailed description of the furnace will be attempted.

The stack 90 feet high, with a 15.5-foot bosh and 9.5-hearth, is blown through eight 5-inch tuyeres, about 18,000 cubic feet of air being delivered per minute at a pressure of 12 to 15 lb. per square inch, with a blast temperature of 1,000 degrees Fahrenheit.

The ore charge averages 60 per cent. of iron, but on account of the loss in flue dust, does not yield more than 58 per cent. of pig metal. The total charge of coke, ore and stone is as follows:—

Coke	5,000 lbs.	
Ore	8,000 lbs.	= 1.6 lbs ore per pound of coke.
Limestone	2,800 lbs	= 35 per cent. of ore charge.

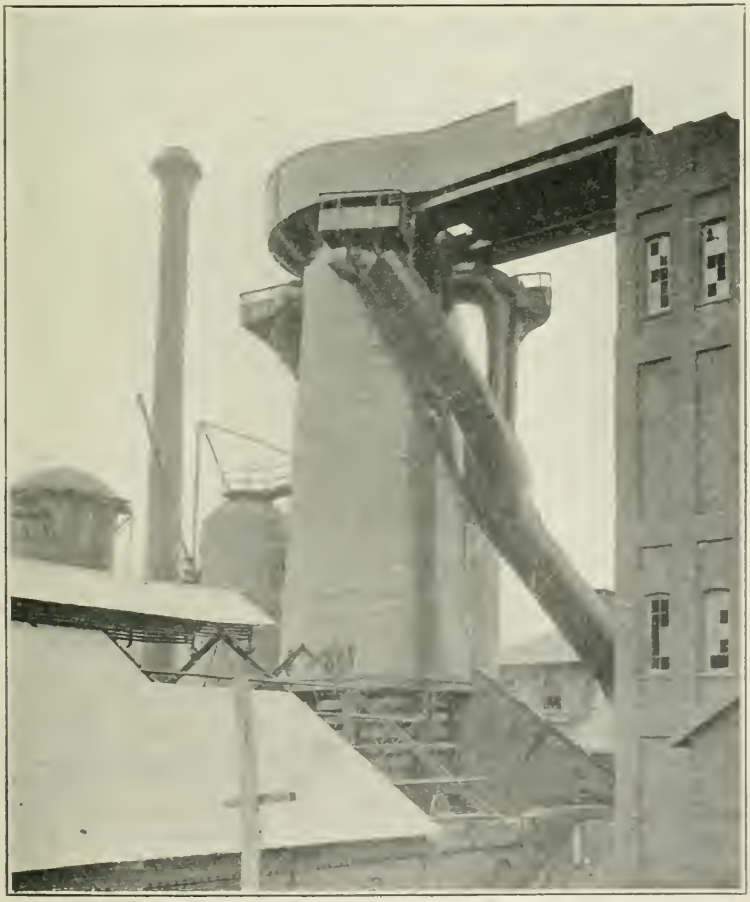
The slag which is found by experience to give the best results contains 50 per cent. of silica and alumina combined. If a more basic slag is attempted, trouble is caused by the cinder clogging the tuyeres. The iron made is a low phosphorous Bessemer, and for this reason commands a higher price than the usual run of Bessemer pig.

The ore charge consists of 85 to 95 per cent. of Chateaugay concentrates, the balance of the charge being mill cinder, and anywhere from 8 to 12 per cent. of the concentrates are blown out as flue dust. The charging bell is of the same type as that used in the Port Henry furnace, (i. e., a modification of the F. Firmstone pattern), the inside bell having a drop of 7 inches, but on account of the Chateaugay concentrates being so much finer than the Mineville material, this double section bell does not give as good results as are obtained in Port Henry.

The Superintendent, Mr. E. B. Tinney, to whom thanks are due for all information, stated that the furnace lining is about worn out, and he was confident that with re-lining better results would be secured.

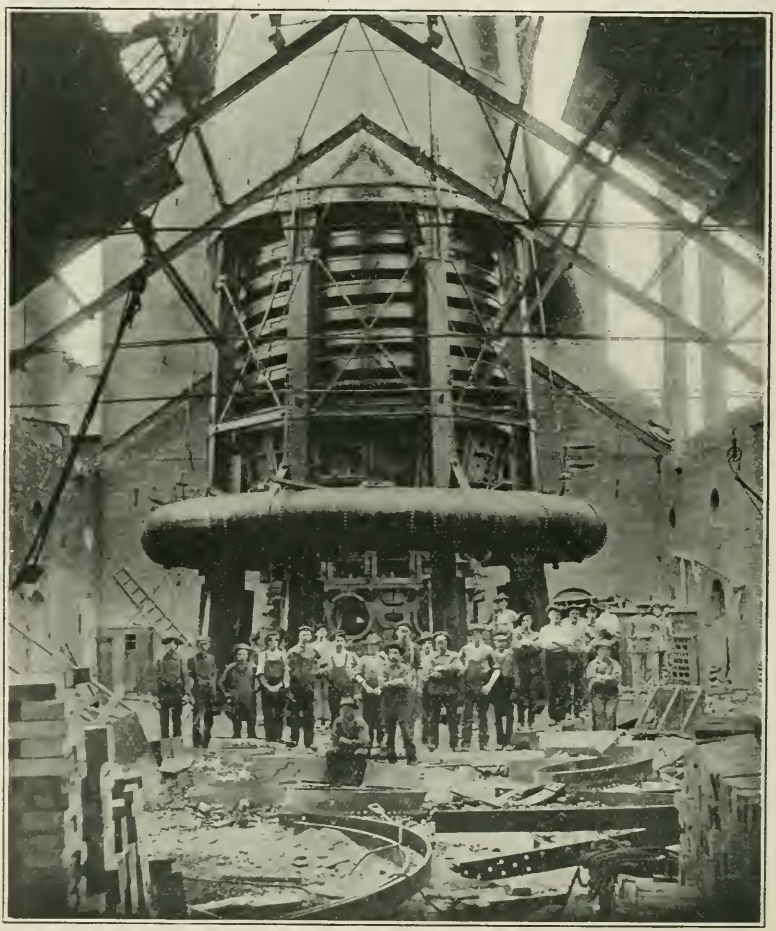
The chief trouble is due to the fact that the fine concentrates run ahead through the coke and accumulate as a blanket scaffold at some point near the top of the bosh. This has been proved many times, as for instance when the blast was off for changing a tuyere the red hot dust runs out through the tuyere breast in a regular stream. This blanket not only prevents the blast getting through, but also stops the column of material in the furnace descending, and brings all smelting operations to a standstill. The blast pressure will rise from normal 12 up to 20 lb. per square inch and if not relieved will finally stop the blowing engines. A furnace in this condition is said to "hang," and at Standish this "hanging" is almost continuous. In order to relieve this state of affairs the furnace is "slipped" at least once an hour, that is the blast is slackened for a moment, giving the stock in the furnace a chance to move, then the blanket or scaffold slips, and smelting goes on once more until another tightening up necessitates slipping again. Needless to say, this method of working the furnace is unsatisfactory, and under these conditions the Standish furnace does not produce more than 3,500 tons of iron per month. The company are however getting around the difficulty by installing a nodulizing kiln which is expected to nodulize 150 tons of concentrates per day, and then with the coarser ore mixture thus obtained the output will undoubtedly be increased.

Blast furnace at Standish, N.Y., where concentrates from Lyon Mountain are used.



Blast furnaces at Standish, N.Y., showing arrangement of "downcomers."

Old charcoal kilns at Standish, N. Y., now dismantled.



Blast furnace at Standish, N. Y., showing cooling arrangement above the bosh.

Concentration and Nodulizing at Lebanon, Pa.

At Lebanon, Pa., the concentrating plant of The Pennsylvania Steel Company is successfully treating the low grade iron ores of the Cornwall district. After concentration, the fine ore is nodulized in four kilns of the same type as are used for clinkering cement.

The mines at Cornwall produced 18,000,000 tons of ore up to the end of 1904, and at present are yielding about 750,000 tons annually. This is worth noting, when it is considered that the ore is low grade and requires either roasting or concentration before it is fit for use in the blast furnace. The ore is a fine grade magnetite intimately mixed with talcose material low in phosphorus, but containing from 1.5 to 2.5 per cent. of sulphur. The sulphur exists partly as iron pyrites, and partly as chalcopyrite. The copper in the crude ore will average 0.44 per cent. This is partially recovered in the "copper mill" from the tailings after the magnetite has been removed. Some of the copper, however, remains with the iron ore and the nodulized product contains 0.20 per cent. of that metal.

Comparative analyses of crude ore, concentrates, nodules and tailings give the following figures:—

	Fe	SiO_2	Al_2O_3	Ca O	Mg O	S	P	Cu
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
Crude Ore	42.06	16.00	4.81	4.22	7.21	1.86	.....	0.44
Concentrates	61.00	6.74	2.09	2.10	2.93	1.18	.....	0.19
Nodules	60.00	8.92	2.29	2.39	2.98	0.03	0.01	0.20
Tailings	19.05	25.12	4.65	10.22	12.71	8.49	.....	2.72

The mill was designed by the Allis Chalmers Company of Chicago and is substantially built of steel and wood on concrete foundations. The accompanying photographs of the exterior will give some idea of its size and construction. Several changes in the original design were made while the mill was being built, and the general plan of machinery and methods of separation have undergone modification during the development of the process. Dry concentration was the original scheme and different types of magnetic separators were used with varying success, until finally the Gröndal system of wet concentration was installed.

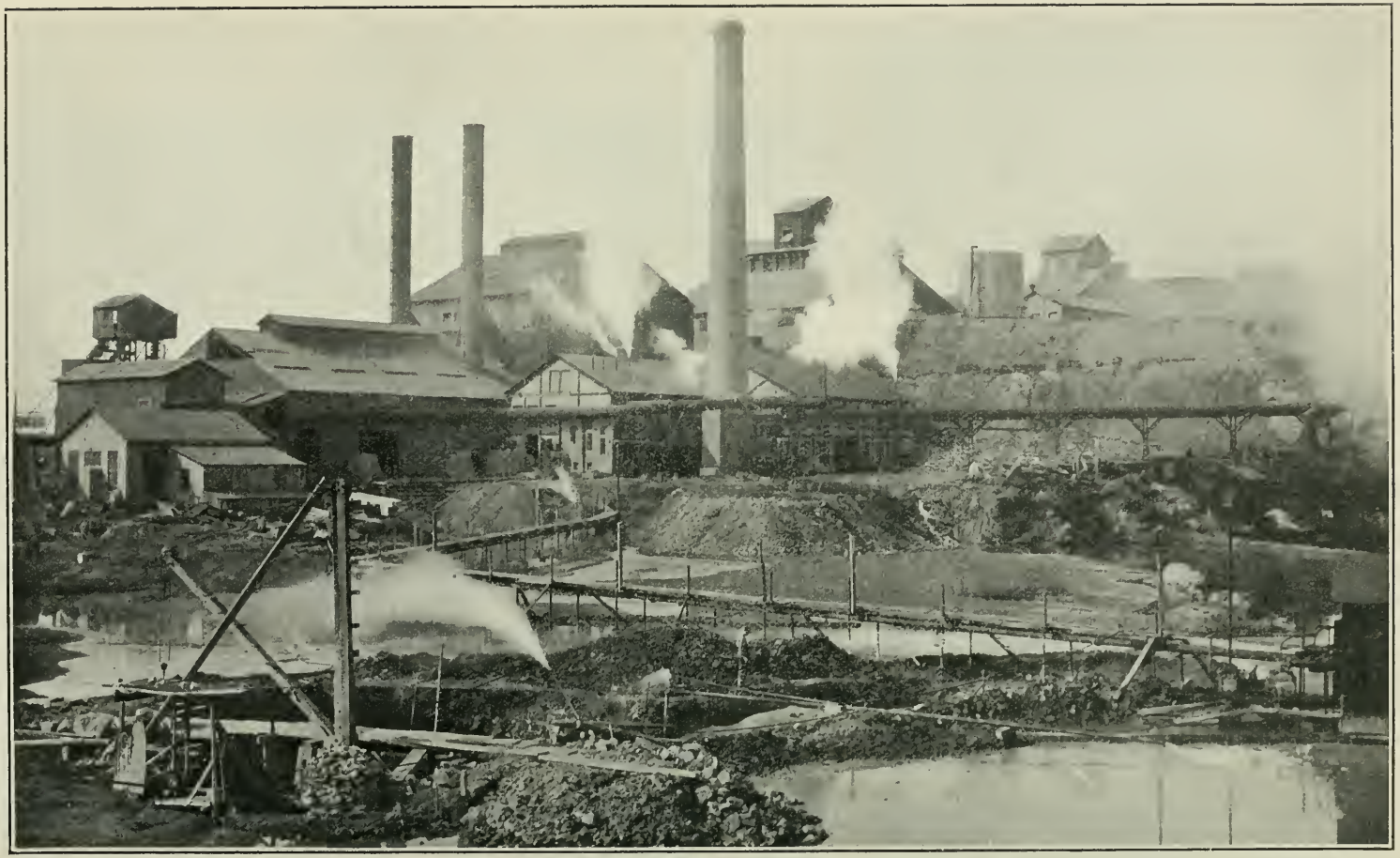
The Gröndal machines, which are the ones in use at present, have given the best results so far, and appear to have solved successfully the problem of concentrating the Cornwall ores.

The No. III. double Gröndal separator was the type first installed, and now the No. V. single drum Gröndal is being tried, with distinct success. The superintendent of the mill, Mr. B. E. McKechnie, to whom thanks are due for the information contained in this description, considers the No. V. Gröndal much superior to the No. III., both mechanically and also as regards expenses incidental upon operating and repairs—items that are well worth considering.

A diagramatic flow sheet of the mill is shown.[29] The path of the ore is indicated by arrow heads and each piece of machinery is numbered, so that by reference to the "Tree of the Process" the ore can be followed from its preliminary crushing through the mill to the nodulizing kilns. From 700 to 800 tons of crude ore are handled per day in two 12-hour shifts, and after separation will yield about 500 tons of concentrates, about 1½ tons of crude ore being necessary to produce one ton of concentrate. This proportion will vary, however, with the per cent. of iron in the crude ore

The crude ore from the mine is delivered to the "upper mill" in drop bottom steel cars and is fed directly to a No. 6 Gates crusher, from which it gravitates down a chute to crushing rolls 15x40-inch running at a speed of 42 R.P.M. These rolls reduce

[29] See page 267.

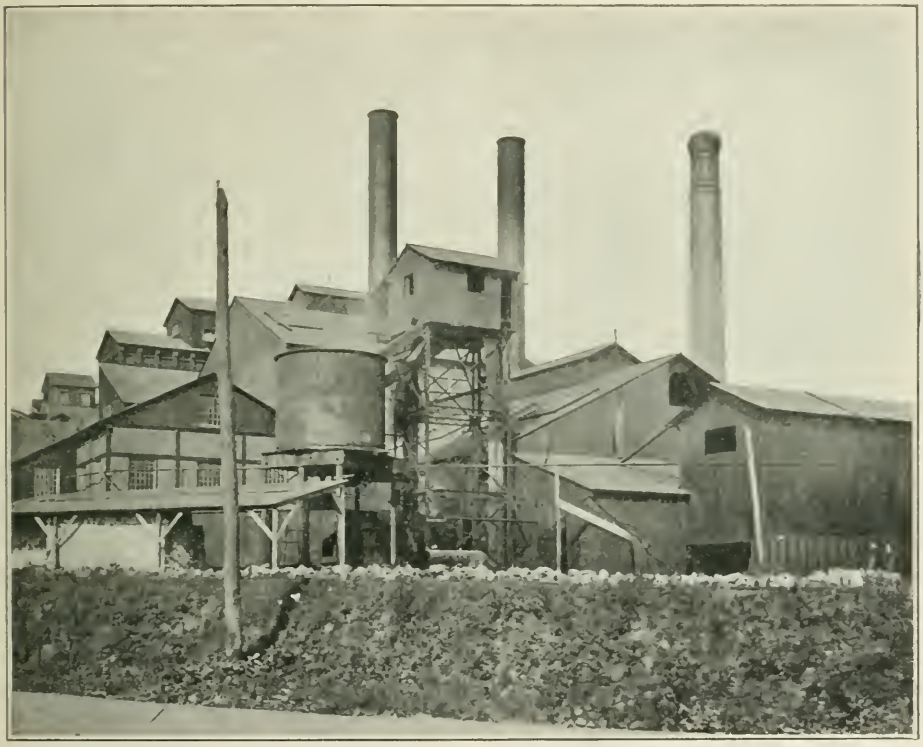


View of concentrating and nodulizing plant at Lebanon, Pa.; magnetic separators in upper portion and nodulizers in lower portion of mill.

the ore to ¾-inch size, and the crushed ore is then taken by a Robins belt conveyor to a large storage bin of 2,000 tons capacity. This upper mill, as it is called, is driven independently by a 75-h.p. Corliss simple engine, steam being supplied from the main boiler room.

Process of Concentration

From the storage bin the ore is fed to the "lower mill" over six ordinary feeders. Four of these feeders deliver to the "left side." The remaining two deliver to the "right side" of the mill; the two sides run independently of each other, and will be described separately.



Another view of Lebanon plant, showing bucket elevators and storage tank for hot nodules.

Left Side: The ore from the storage bin is fed over four ordinary drum feeders to four large wet ball mills of the central feed and discharge type, grinding to 1½-M.M. Each mill has an exterior 5-M.M. screen attached for removing chips, etc., etc. The pulp from these mills flows to 5 No. III. double Gröndal separators. The concentrates are laundered to the concentrate settling tanks, and the tailings go to a Frayer sand pump, where they are pumped to the "copper mill."

Right side: Two feeders deliver the ore from the bin to a pair of 5-M.M. trommels, that yield oversize to spring crushing rolls 15x40 inches, the undersize going to two 1½-M.M. trommels. The oversize from this second pair of trommels is sent to one double Gröndal coarse separator, while the undersize is delivered to a row of six double and one single Gröndal separators. The iron concentrates are laundered direct to the iron concentrates settling tanks, and the tailings go to the copper mill. The iron concentrates from the one coarse Gröndal separator are re-ground in a ball mill, and

then elevated to the six final separators mentioned above. Tailings from this coarse separator go to the copper mill. The oversize from the first pair of trommels, after passing the 15x40-inch rolls, is again screened in two 1½-M.M. trommels. The undersize is elevated to the six final magnetic separators, and the oversize is crushed in a second 15x40-inch rolls set very close, then screened again in a fourth set of trommels, the undersize being elevated to the final separators and the oversize going to the coarse Gröndal separator, thus completing the cycle.

All concentrates are laundered to three concrete settling tanks built immediately in front of the charging or cold end of the nodulizing plant. Each of these tanks is of 500 tons capacity, the bottoms being made of coarse stone filled in loosely to allow the water to drain off. Unfortunately there is so much water, and the concentrates are so fine, that this draining process is a slow one, so that concentrates are fed to the kilns containing 8 (?) per cent. of moisture. The three tanks are used in the following order: one being filled, one being drained and one being emptied. The superintendent is of the opinion that if he had double this tank capacity, i.e., if there were six tanks instead of three, much more water would drain off in the additional time gained, and the concentrates would then be fed to the nodulizers much drier, which is very desirable, for not only must the water be driven off in the kiln, but the dry concentrates can be fed with greater regularity, an important feature, because regularity of feed and heat in the kilns is essential, if best results are to be obtained.

The concentrates as fed to the nodulizing kilns run approximately 61 per cent. of iron with 1 per cent. of sulphur. The nodules from the kilns will average 58 to 60 per cent. of iron and contain only 0.03 per cent. of sulphur, proving that the kilns are good de-sulphurizers, also showing that part of the Fe_3O_4 in the concentrates is oxidized to Fe_2O_3 in the nodules. The sulphur in the concentrates could be reduced in the mill by closer separation, but as this sulphur can be eliminated in the kilns, nothing would be gained and considerable iron would be lost in the tailings.

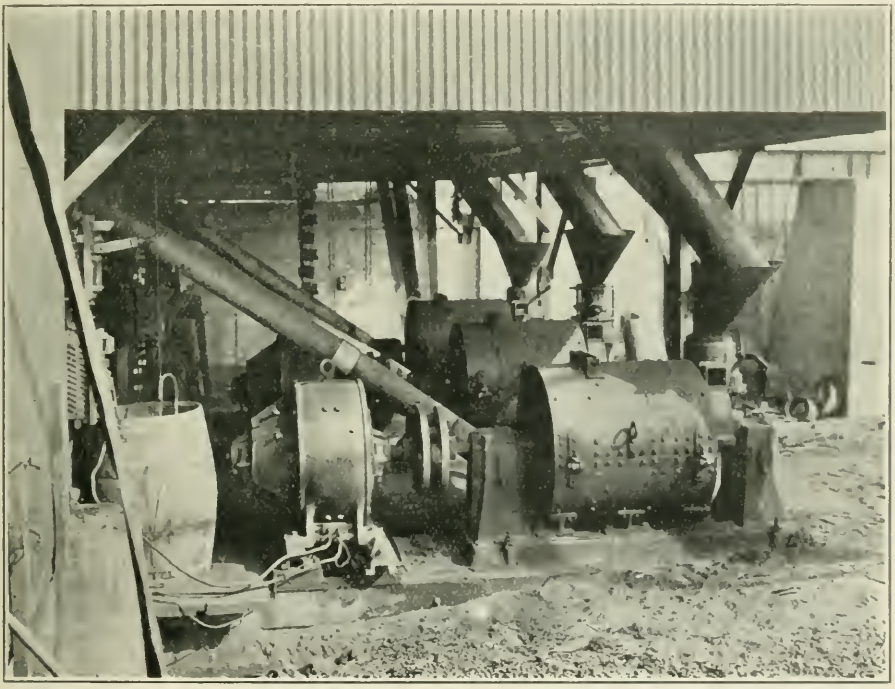
The power for driving the lower mill is supplied by a 24x48-inch Corliss simple engine situated in the main engine room. Electrical energy for light and power is supplied by two 150-kilowatt Westinghouse generators connected directly with 16½x18-inch Buckeye engines. Exhaust steam is used for heating boiler feed water, and also for warming the mill, and the mill water in cold weather. Steam is generated in four 250-h.p. Babcock and Wilcox boilers, using blast furnace gas as fuel, piped about 2,500 feet from the blast furnaces. Coal is used as auxiliary fuel, but very little is needed.

Nodulizing Plant

At the lower end of the mill the four nodulizing kilns are installed. Three of these are 100 feet long by 7 feet in diameter, and fitted with four tires. The fourth is also one hundred feet long, but is eight feet in diameter, and this kiln is provided with only two tires. The three smaller kilns are lined throughout with 9-inch brick, while the larger one is only lined for 50 feet up from the hot end with 9-inch, the remainder being 6-inch brick. This method of lining is giving satisfaction and effects a saving in brick, with a corresponding lessening in the total amount of dead weight. It may be noted here that one of the smaller kilns has warped and during rotation lifts one tire from its rollers. This trouble is avoided in the two-tired kiln, for, no mater how much it may warp it must rest on its two supporting points. Also the two-tired kiln takes from 1 to 1½ less horsepower to rotate it, for the reason that there is less friction.

The concentrates are picked up out of the settling tanks by a clam-shell bucket operated from a 75-h.p. overhead electric crane, and are dumped directly into the feeders of the four kilns. Fuel is fed to the kiln at its lower end, and this fuel may be anything that is cheap and makes a hot fire. In Lebanon they use coal, coke-oven gas and coke-oven tar. Coal is preferred because the temperature can be held under better control, and the nodulized product is more uniform in size. In wet weather the coal grinders (three of these machines are used) cannot handle wet coal, and then coke-oven gas or

tar must be used, generally both together.* Whatever fuel is used, the highest temperature, 1,300 degrees to 1,400 degrees C., is maintained about 15 feet from the hot end. This range of heat is found to give the best results. Fuel consumption will approximate as follows: If coal is used, 180 lb. per ton of nodules will be required. Using coke-oven gas, 5,200 cubic feet are necessary per ton. While using coke-oven tar, 20 gallons will be required per ton of nodules produced. The coal used should contain over 25 per cent. of volatile matter and should be of such fineness that 90 per cent. will pass a 100-mesh screen. The superintendent's opinion was asked on the possibility of using powdered peat as fuel, it being pointed out that experiments had been tried for clinkering cement in an Ontario cement plant, and had been carried out with some success. His reply was to the effect that if a sufficient temperature could be maintained there was no reason why powdered peat would not answer, and as a much higher heat was



Coal grinders supplying powdered coal to the nodulizing kilns, Lebanon plant.

necessary for clinkering cement than that required for nodulizing iron ores, the suggestion of using peat fuel was well worth investigating

Each kiln is rotated by a 30-h.p. Westinghouse variable speed motor. The average horsepower consumed per kiln, however, is not over 15, and the speed of rotation may be varied from 1 to 2 revolutions per minute. The red hot nodules of sintered ore drop from the lower end of the kiln to a chain bucket conveyor that runs under the four kilns and delivers the ore to a steel storage tank placed over a railroad track, from which it is shipped to the blast furnace. When all four kilns are running about 400 tons of nodules are made daily, the output both as regards quantity and quality depending upon the proper control of temperature and the regularity of the feed. The nodules are quite hard and porous. 80 per cent. of the product is larger than ¼-inch, and nothing is finer than 12-mesh, hence they make a very desirable material for smelting in the blast furnace.

* This trouble will be obviated by coal dryers, which are being installed

Cleaning the Kilns

Inside the kilns and near the hot ends are formed heavy ring deposits of sintered ore, and every ten days or so each kiln must be taken off, cooled down, and cleaned out. Any repairs that are necesary are made at the same time. Repairs to the brick lining are very light; the original lining protected by the accumulated deposit lasts well, and although the kilns have been in operation over a year the only repairs needed are a few patches here and there. Two men employed one day a month, will make all lining repairs for one kiln. This heavy ring deposit has one good feature, in that it protects the brick lining. But when it grows so rapidly that it necessitates shutting down a kiln every ten days or so it becomes a serious drawback. It can be avoided to a certain extent, and the number of days a kiln can be run without needing cleaning may be increased by careful regularity in feeding the concentrates, and controlling the flame temperature. This strict regularity of feed cannot be obtained to any extent in Lebanon on account of the excessive moisture in the concentrates. Another feature that claims attention is the chain bucket conveyor that takes the hot nodules from the kilns to the outside storage tank. The heat from the red hot nodules plays havoc with this conveyor, causing the buckets to warp, hence breakdowns are frequent and repairs expensive. In designing a new plant the obvious remedy would be to do away with the conveyor altogether, and to place the storage tank on a lower level than the kilns, allowing the hot nodules to gravitate down to it through iron chutes. Or a skip hoist might possibly prove the better solution of this difficulty.

A visit was paid to the blast furnace plant of the company, with the idea of learning how the nodulized product of the concentrating mill behaved in the process of smelting. Mr. R. H. Lee, superintendent of the furnaces, to whom the writer is indebted for much information, was most enthusiastic on the subject of nodulized small ores, stating that a considerable fuel economy was secured by their use, and that the furnaces when burdened with a liberal percentage of this material, ran more uniformly and with less trouble than when using straight roasted ore. Interesting data was furnished by Mr. Lee fully establishing his contentions, but the writer in deference to the wishes of The Pennsylvania Steel Company is unable to present this information for publication.

Tree of the Process

Crushing Mill:—

1. Cars from mine deliver ore to (2)
2. Gates Crusher No. 6 to (3)
3. Coarse rolls 15 x 40 inches and 42 R.P.M. to ¾ inch to (4)
4. Robin's Belt conveyor to (5)

Concentrating Mill:—

5. Bin 2000 tons capacity to (6) and (9)

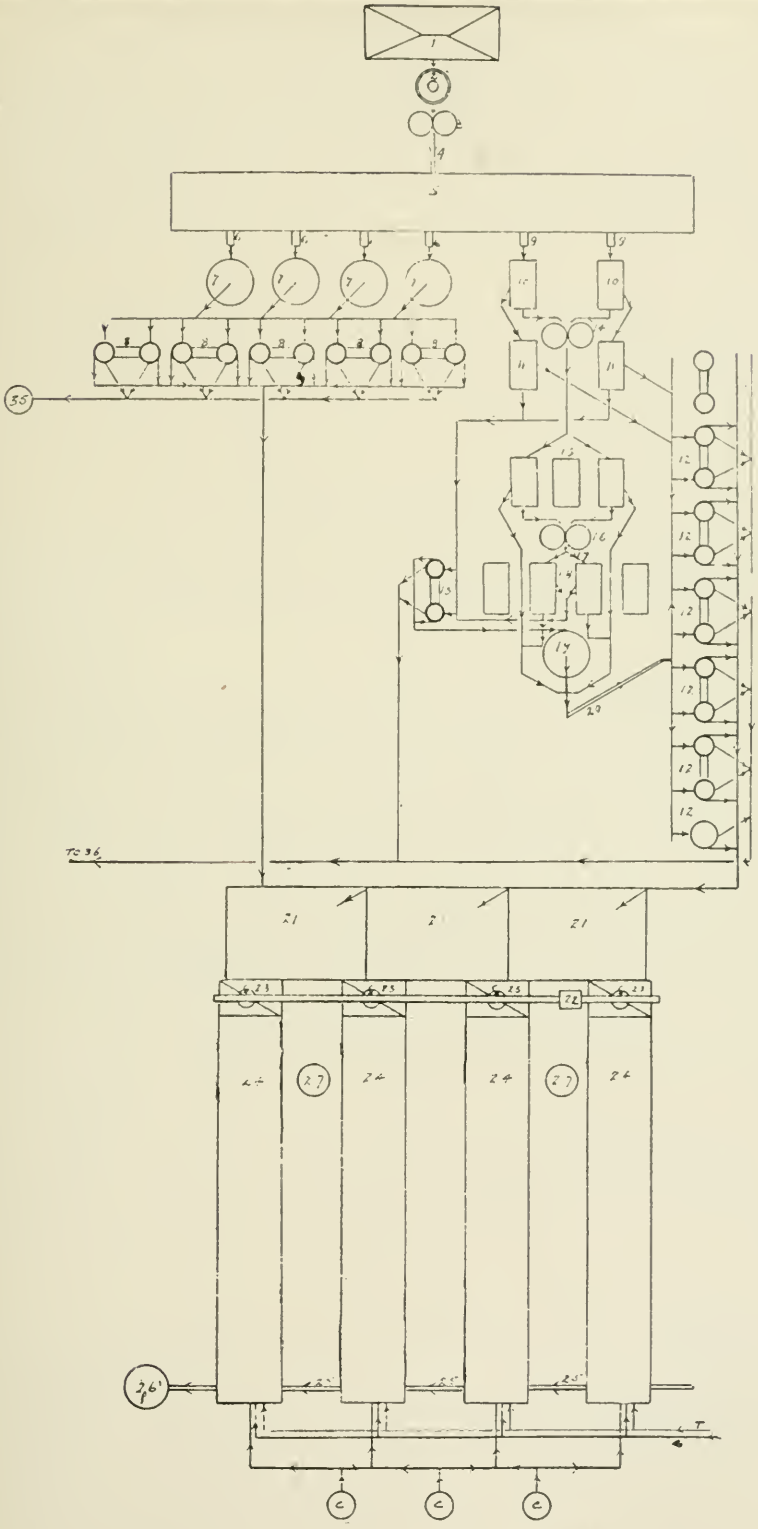
The Mill has two sides:

Left Side:—

6. 4 Feeders to 7
7. 4 Ball Mills to 1½ M.M. to (8) and 5 M.M. for chips
8. 5 Double Gröndal Separators yield non-magnetic to (35) and magnetic to (21)

Right Side:—

9. 2 Feeders to (10)
10. 2 Trommels 5-M.M. yields oversize to (14) undersize to (11)
11. 2 Trommels 1½-M.M. yields oversize to (13) undersize to (12)
12. 6 Double Gröndal Separators } 6 working. Magnetic to (21), non-magnetic to (35)
    1 Single Gröndal Separator }
13. 1 Double Gröndal coarse Separator yields non-magnetic to (36) and magnetic to (19)



Diagramatic sketch of the separating and nodulizing process at Lebanon, Pa.

14. No. 1, Spring Rolls 15 x 40 inches, to (15)
15. 3 Trommels 1½-M.M. (2 working) yields oversize to (16), undersize to (20)
16. No. 2, Rolls 15 x 40 inches set close to (17)
17. Elevator to (18)
18. 4 Trommels 1½-M.M. (2 working) yields oversize to (13) and undersize to (20)
19. Ball Mill 1½-M.M. to (20)
20. Elevator to (12)
21. Iron Concentrate bins to (22)

Nodulizing Plant:—

22. Electric overhead crane 75 h.p. to (23)
23. 4 Feeders to (24)
24. 4 Nodulizing Kilns to (25)
25. Chain Bucket Conveyor to (26)
26. Storage tank for hot nodules.
27. 2 Draft Stacks for kilns

C.C.C. 3 Coal Grinders to 100-mesh feeding to (24)

G. Gas pipe line from Coke oven plant to (24)

T. Tar delivered from tank cars to storage tank to (24)

35. Frayer sand pump to (36)
36. Settling tank for copper mill.

The labor required in operating the concentrating and nodulizing plant at Lebanon is as follows:

Upper Mill: 4 men unloading ore, 1 engineer and 1 helper; total, 6 men per 12-hour shift: per 24 hours, 12 men.

Lower Mill: 1 man at storage bin, 1 man at ball mill feeders, 1 man at trommel feeders, 1 man at ball mills, 1 man at separators, 1 oiler, 1 foreman; total, 7 men per 12-hour shift: per 24 hours, 14 men.

Nodulizing kilns; 1 man at crane, 1 man at feeders, 1 oiler, 1 man at burners, 1 laborer; total, 5 men per 12-hour shift; per 24 hours, 10 men.

Engine Room and Boilers; 1 engineer and 1 helper, 2 firemen, 1 coal wheeler: total, 5 men per 12-hour shift; per 24 hours, 10 men.

Grand total, 23 men per 12-hour shift; per 24 hours, 46 men.

General; 1 master mechanic, 1 electrician, 2 machinists, 8 machinist's helpers, 1 boss carpenter, 2 carpenter helpers; total, 15 men per 10-hour shift.

Labor: 1 boss and 9 men; total, 10 men per 10-hour shift.

The power necessary to run the machinery is apportioned thus:

	Horsepower.	
Upper Mill:		
1 No. 6 Gates Crusher	50	
1 40 x 15-inch Rolls	10	
1 Belt Conveyor and Lights	15	75
Lower Mill:		
2 40 x 15-inch Rolls	25	
5 Ball Mills	125	
2 Elevators	5	
16 Screens	10	
1 6-inch Tailings pump	25	
12 Magnetic Separators	50	
Water pumps	100	
Lights	10	350

Nodulizing Kilns:		
1 Crane	75	
4 Kilns	60	
3 Coal Grinders	60	
4 kiln feeders	5	
1 Conveyor	5	
Lights	5	210
Copper Mill:		
7 Tables and 1 jig	3	
1 Ball Mill	10	
Pumps	2	15
Total horse power required		650

Concentration Tests with Ontario Magnetites

In order to show that low grade Ontario magnetites are amenable to concentration by means of the electro-magnet, and with the view of ascertaining if possible the per cent. of separation efficiency that might be expected in actual commercial operation, samples of ore were obtained from various localities in the Province and submitted to preliminary testing.

In most cases the samples were secured by the writer in person, from old ore piles adjacent to the mine workings, and as far as the time at his disposal permitted, samples were taken as representative of the average of the piles of ore. The sample from the township of Hutton was supplied by Mr. N. L. Leach, Manager of Moose Mountain Limited, and the Temagami jaspilyte sample was obtained from Mr. T. B. Caldwell of Lanark, to whom thanks are due for his kindness and courtesy in supplying the writer with information on the iron industry in general.

The separating tests were carried out in the mining laboratory of the Kingston School of Mines, and as the only magnetic concentrator the laboratory contained was an old Wetherill bi-polar machine, it was decided to build a single drum Ball and Norton separator. The design and construction of this machine was carried out under the supervision of L. W. Gill, Professor of Electrical Engineering from details supplied by Stafford Kirkpatrick, Professor of Metallurgy, and the writer.

The exciting field of this machine consists of 12 stationary electro-magnets carried by a cast-iron spider and enclosed in a brass drum 14 inches across the face and 18 inches in diameter, the drum being protected by a thin rubber sleeve. The electro-magnets have a capacity of 10 amperes at 110 vol's and are arranged in a series of alternate polarity, the position of the field being altered at will by means of an outside arm attached to the spindle carrying the magnets. The drum is made water tight and may be used in either of two box wells placed side by side for dry or wet concentration, an overhead travelling trolley being provided to lift the drum from one box to the other. Power is supplied by a ¾-h.p. electric motor.

All of the samples tested were small, ranging from 5 up to 25 pounds in weight, hence it was impossible to make anything but preliminary tests, and the results shown in the accompanying table should be regarded as indications only of the possibilities of actual work on a large scale. As the samples were small, the crushed ore was not sized by screens before separation, and this important detail had therefore to be omitted. A complete test on each sample of ore would consist of crushing, say a ton lot down to about ¼-inch, followed by screening the crushed material to a half dozen different sizes, and concentrating each size separately. In this way an accurate idea would be gained of the exact size to which the ore should be crushed in order to afford the most efficient

separation. If it was found necessary to pulverize the ore finer than 20-mesh, in order to give a concentrate containing over 60 per cent. in iron, with not more than 10 per cent. of iron lost in the tailings, the ordinary dry method of separation would probably not prove as efficient as the wet process, because of the difficulty experienced in keeping the concentrates free of gangue dust and preventing fine particles of magnetite being carried into the tailings. Unfortunately both wet and dry methods could not be carried out in making the present tests, as the samples were too small to be divided. This is regrettable as it prevented comparisons being made as regards the efficiency of each process on any given ore.

The crude ore samples were analyzed quantitatively for magnetite (Fe_3O_4), insoluble matter, sulphur and phosphorus; qualitative tests were also made for titanium, but only traces of that element were found in certain cases. The concentrates were analyzed for magnetite, insoluble matter, and sulphur in those instances where the original ore was high in sulphur. Tailings were run for soluble iron only, the percentages of magnetite being calculated therefrom. This is of course inaccurate, as the tailings contained iron in the form of iron pyrites and ferro-magnesian minerals to some extent, hence all percentages of magnetite in the tailings may be considered high, especially in those cases where the crude ore was high in sulphur. All analyses were made by A. G. Burrows, Provincial Assayer.

The results of the different tests are tabulated in the accompanying form showing in each case the treatment of crude ore, concentrates, tailings, and the efficiency of the operation. In order to make clear the interpretation of this table, the following made by A. G. Burrows, Provincial Assayer.

A Sample from Robertsville Mine

Take the case of Robertsville Lizzie mine. This ore on analysis showed 52.58 per cent. of magnetite (38.17 per cent. iron) 35.3 per cent of insoluble matter, 0.38 per cent of sulphur and 0.025 per cent of phosphorus. The sample was crushed so that it would all pass a 5-mesh screen, and then fed through the separator; the drum running at 100 R.P.M. and the magnets excited by a current of 4 amperes at 110 volts. The tailings from this first operation were then re-passed twice, the drum running at 100 R.P.M., and the magnets excited by a current of 5 amperes, the final tailings being considered as waste. The concentrates were then re-passed twice, the drum running at 90 R.P.M., the exciting current being 6 amperes, the heads from the second pass were called final concentrates, and the tails united with the preceding waste to form the final tailings. The final concentrates proved on analysis to contain 94.03 per cent. of magnetite (68.11 per cent. iron), 3.80 per cent. of insoluble matter, and 0.03 per cent. of sulphur. The final tailings analyzed 2.93 per cent. of iron corresponding to 4.05 per cent. of magnetite. The efficiency of the operation calculated by the equations given on a preceding page showed that 96.66 per cent. of the original magnetite in the crude ore was saved in the concentrate, and that 3.44 per cent. of the original magnetite was lost in the tailings; also that 1.85 units of crude ore were required to make one unit of concentrate.

The following analysis will make this more clear:

Magnetite in crude ore =52.58 per cent.
" " Concentrates=94.03 "
" " Tailings = 4.05 "

Then by equation (1)

$$\frac{94.03-4.05}{52.58-4.05} = 1.85 \text{ units of crude ore required per unit of concentrate.}$$

Therefore

$$\frac{10 \text{ units of crude ore}}{1.85} = 5.405 \text{ units of concentrate obtained from 10 crude units.}$$

But 10 units of crude ore contain 5.258 units of pure magnetite (by analysis). Hence the distribution is as follows:—

			p. c.	Units.
10 units crude ore	5.405 units of concentrate 54.05 per cent.	Magnetite	94.03	5.0823
		Gangue	5.97	0.3227
				5.405
	4.595 of Tailings. 45.95 per cent.	Magnetite	4.05	0.1861
		Gangue	95.95	4.4089
				4.595
		Total.....		10.000

The efficiency of the operation will be $\frac{5.0823 \text{ units of magnetite in Concentrate} \times 100}{5.258 \text{ units of magnetite in crude.}} = 96.66$ per cent. of the magnetite in crude ore saved in concentration

and, $\frac{0.1861 \text{ units of magnetite in tailings} \times 100}{5.258 \text{ units of magnetite in crude}} = 3.53$ per cent. of the magnetite in crude ore lost in the tailings.

It will be noted here that 96.66+3.53=106.19. This is explained by the fact that the percentage of magnetite in the tailings was calculated direct from the soluble iron therein, no allowance being made for the iron contained in the pyrites, hence the per cent. of magnetite in the tailings as given was slightly above the actual amount.

It may be objected that this method of re-concentrating tails and heads is not comparable with actual practice. This is partly true, as the concentrates are seldom passed through the machine again. The tailings, however, are always re-crushed and re-separated until their iron content fails below the economical point of recovery. Time did not permit of this re-crushing of the tails, hence the above method was followed as a substitute, and although this method may not be admissable in actual practice, the results afforded can be taken as indicative of what might be expected from a commercial process.

Silicious Magnetite from Hutton

The sample of silicious magnetite from Hutton township was of a very fine crystalline structure and required pulverizing to 60-mesh in order to separate the constituent minerals. This was proved in a preliminary test as follows; thirty-eight and a half ounces of the crude ore were crushed so that 24.85 per cent. passed a 40-mesh screen, 20.90 per cent. passed a 60-mesh screen and 54.25 per cent. passed an 80-mesh screen. The different sizes were then concentrated separately with the following results:—

	Crude ore.		Concentrates.		Tailings.	
Pass Screen.	Ounces of ore.	Per cent. of ore.	Per cent. of concentrates.	Per cent. of iron in concentrates.	Per cent. of tailings.	Per cent. of iron in tailings.
80 mesh.....	20.75	54.25	47.20	60.90	58.00	11.58
60 "	8.00	20.90	24.55	49.56	19.00	13.88
40 "	9.5	24.85	28.25	47.04	23.00	17.43
	38.25	100.00	100.00	.....	100.00	.....

The above was accepted as proof that the ore required grinding finer than 40-mesh to give efficient separation results, and therefore for the final test the sample was pulverized so that it would all pass a 60-mesh screen. The results of this test shown in the accompanying table, indicates that this ore is not easily concentrated dry. The amount of dust carried into the concentrates, shown by the percentage of insoluble

matter in the heads, and the per cent. of iron lost in the tailings combine to give a low separation efficiency.

The jaspilyte ore from Temagami composed of alternate bands of fine grained magnetite and jasper did not require grinding finer than 20-mesh to give a higher efficiency result than the Hutton ore, because only 1.29 units of crude ore containing 66.26 per cent. of magnetite were required to make one unit of concentrate containing 78.02 per cent. of magnetite. However, the results of this test are not satisfactory from the standpoint of dry separation, and it is probable that for commercial work the wet method would have to be employed.

All of the remaining samples[31] were crushed to 5-mesh only, as it was expected that fair results would be obtained without finer grinding. This assumption proved to be correct in the majority of cases, and concentrates were obtained averaging well over 60 per cent. in iron and low in insoluble matter. The percentage of sulphur in certain samples was not reduced in the concentrate to as low a point as had been hoped for, but as this element can be eliminated in the subsequent nodulizing process, its presence is not hurtful unless an attempt is made to smelt the concentrates without agglutinizing.

It is probable that the concentrate from all of the above ores would require either nodulizing or briquetting before being used for smelting. This could doubtless be definitely ascertained by making a sieve test to determine the relative percentages of different sized material which the concentrate contained, and if time had permitted this would have been carried out in each case.

The writer wishes to thank Mr. G. J. McKay, Demonstrator in the School of Mines, Mining Laboratory, for assistance rendered during the time the separation tests were being made.

Cost of Grondal Plant, 1,000 Tons Per Day

Messrs. Fitzgerald and Bennie, Niagara Falls, N.Y., Canadian agents for the Gröndal Process, have furnished data as to the cost of erection and operation of the Gröndal system of concentrating and briquetting, the plant to treat 1,000 tons of crude ore per 24 hours.

In presenting this estimate it should be explained that as there is no plant of similar character operating in this country, accurate data pertaining to costs of operation were difficult to obtain, and therefore the several items are subject to variations according to local conditions. Against this it should be pointed out that in every case the European plants which have installed the Gröndal apparatus are deriving a good commercial profit, so that it may only remain to choose wisely the location in Ontario to obtain similar success.

The cost of the crude ore is taken at $1.25 per net ton delivered at the plant. This no doubt could be reduced in many cases to less than $1.00, but it was thought advisable to insert the higher figure as part of the crude ore required may possibly be transported some distance from outlying mines. No provision is made for an extensive storage yard and automatic ore handling machinery, but if the plant were so located that shipments from the mines were intermittent during the winter months, a large stock of crude ore would be necessary, and for its economical handling a modern ore bridge equipped with grab buckets is essential.

It is assumed that 1,000 tons of crude ore averaging 40 per cent. iron are delivered to the mill every 24 hours at $1.25 per ton; that two tons of crude ore are required to make one ton of concentrates, allowing for a loss of 12 per cent. in the tailings: and that 500 tons of concentrates are produced, averaging 68 per cent. of iron, which will make about 520 tons of briquettes containing 65 per cent. of iron.

[31] See page 273 for full table of results.

Results of Concentration Tests on some Ontario Magnetites

Sample.	Crude Ore.							Concentrates.							Tailings.					Efficiency of Separation.		
	Magnetite (Fe_3O_4). per cent.	Iron (Fe). per cent.	Insoluble matter, per cent.	Sulphur. per cent.	Phosphorus. per cent.	Crushed to mesh.	Passed through separator.	Exciting current, amperes.	Speed of Drum, R. P. M.	Re-passed through separator.	Exciting current, amperes.	Speed of Drum, R. P. M.	Magnetite (Fe_3O_4). per cent.	Iron (Fe). per cent.	Insoluble matter. per cent.	Sulphur. per cent.	Phosphorus. per cent.	Re-passed through separator.	Exciting current, amperes.	Speed of Drum, R. P. M.	Magnetite (Fe_3O_4). per cent.	Iron (Fe). per cent.	Magnetite in crude saved in the concentrate. per cent.	Magnetite in crude lost in the tailings. per cent.	Units of crude ore required to make one unit of concentrate.
Hutton, Silicious	48.95	35.46	50.66	0.02	0.064	60	once.	4	100	once.	6	155	78.43	56.80	21.64	.....	....	once.	5	100	23.61	17.10	83.71	16 29	2.12
Temagami, Jaspilyte	66.28	48.00	21.33	0.014	.....	20	"	5	100	"	6	155	78.02	56.51	20.30	.....	....	twice.	4	100	26.90	19.49	90.55	9.45	1.29
Blairton, Cull Ore	58.90	42.65	22.28	0.95	0.028	5	"	4	100	twice.	5½	125	81.61	59.11	11.77	0.175	....	once.	5	100	30.52	22.10	76.99	23.01	1.80
Belmont, Cull Ore	77.35	56.02	17.10	0.36	0.02	5	"	4	100	"	6	120	92.53	67.01	5.70	0.58	....	twice.	5	100	19.22	13.92	94.92	5 08	1.26
Clarendon No. 1	79.05	57.25	8.67	0.03	0.01	5	"	4	100	not re-passed	....	....	86.28	62.49	5.23	.....	....	thrice.	6	120	19.32	13.99	97.45	2.55	1.12
Robertsville No. 1	87.15	63.11	10.82	trace.	0.003	5	"	4	100	"	....	....	95.65	71.27	3.42	.....	....	twice.	5	100	7 33	5.31	99.24	0.76	1.106
" Lizzie Mine	52.58	38.17	30.30	0.38	0.025	5	"	4	100	twice.	6	90	94.03	68.11	3.80	0.03	....	"	5	100	4.05	2.93	96.66	3.44	1.85
" Mary Mine	35.96	26.01	55.86	trace.	0.14	5	"	3½	100	once.	5½	100	78.85	57.11	18.72	.....	....	"	5½	100	8.74	6.33	85.32	14.68	2.57
Glendower No, 1	87.74	63.51	8.26	0.01	0.01	5	"	4	100	not re-passed	....	....	94.30	68.30	2.88	.....	....	thrice.	6	90	12.01	8.70	99.50	0.50	1.08
" Cull Ore	77.63	56.21	12.57	0.86	0.008	5	"	4	100	"	.....	....	88.10	63.81	6.85	0.36	....	"	6	90	12.18	8.82	97.83	2.17	1.16
Wilbur No. 1	93.53	67.73	3.25	0.14	0.005	5	"	4	100	once.	3½	100	91.78	68.65	2.01	.....	....	.....	.....	....	.....	.....	.....	.....	.....
" shipping average	76.63	55.49	3.45	0.04	0.022	5	"	4	100	not re passed	...	....	86.31	62.51	4.85	.....	....	twice.	5½	90	22.06	15.98	95.15	4.85	1.17
Calabogie No. 4	81.28	58.86	6.53	0.45	0.18	5	"	4	100	"	....	....	90.86	65.81	3.75	0.135	...	thrice.	5½	100	27.04	19.58	94.73	5.27	1.18
" Caldwell East Pit	79.88	57.85	10.23	0.03	0.17	5	"	4	100	"	....	....	89.98	64.17	5.02	.....	....	"	5½	120	8.12	5.88	98.82	1.18	1.14
" " West Pit	72.27	52.31	6.62	1 16	0.37	5	"	4	100	"	....	....	86.72	62.81	4.76	0.33	....	"	6	100	18.39	13.32	94.48	5.52	1.27
" Martell Mine	69.59	50.37	26.31	0.103	0.05	5	"	4	100	"	.	....	83.03	60.34	11.05	.....	....	twice.	6	155	18.19	13.17	94.86	5.14	1.26
" Bluff Point	79.30	57.43	9.71	0.19	0.016	5	"	4	100	twice.	6½	120	90.03	65.21	4.01	0.108	....	thrice.	6	100	12.59	9.12	97.88	2.12	1.16
Bessemer No 1	69.29	50.18	22.81	0.177	0 009	5	"	4	100	not re passed	....	....	90.17	65.30	7.10	0.048	....	"	6	120	13.73	9.91	93.62	6.38	1.39
" No. 3, Pit Cull Ore	43.43	31.35	37.33	0.84	0.021	5	"	4	100	"	....	....	87.55	63.41	9.30	0.45	....	twice.	5½	100	11.18	8.10	85.42	11 58	2.36
" No. 4, Pit Cull Ore	46.30	33.53	39.16	0.96	0.01	5	"	4	100	"	....	....	82.23	59.56	13.61	0.73	....	"	5½	120	14.14	10.21	83.77	16.23	2.12

NOTE.—All the Analyses were made by A. G. Burrows, Provincial Assayer.

Cost of Concentrating Plant

1 large Blake or Gates Crusher	$ 4,000
1 smaller " " " breaking to less than 1 inch size	4,000
12 Grondal ball mills, large type, ($1,800.)	21,600
12 Grondal magnetic Separators, ($750.)	9,000
12 slime boxes and de-waterizers, ($500.)	6,000
Transmissions, elevators, feeders, water launders, piping, etc	10,000
Foundations and buildings	20,500
Installation of machinery	5,000
Ore storage yard, tracks, trestles, etc	5,000
Total	$85,100

If it is desired to produce some concentrates of very high iron content, say 70 per cent., re-grinding would probably be necessary, in which case the installation of tube mills with an equipment of additional separators for reconcentrating would be required. Probably one, and not more than two such units would be necessary, which would increase the cost of installation by $5,000.00.

Cost of Briquetting Plant

6 Twin Briquetting furnaces complete	$ 72,000
360 Furnace cars	57,000
12 Briquetting presses	15,000
Gas producers and piping	15,000
Foundations and buildings	15,000
Sundries, contingencies, etc	12,000
Total	$186,000

Power Plant

It is assumed that a 500-h.p. steam and electrical installation, for both concentrating and briquetting plants, including pumping machinery for supplying the mill with water, will be sufficient. This plant would probably cost $25,000 complete.

Total Cost of Complete Plant

Concentrating mill	$ 85,100
Tube-mills and re-concentrators (if desired)	5,000
Briquetting plant	186,000
Power plant	25,000
Total	$301,100

For a plant handling 1,000 tons of crude ore daily it is obvious that considerable working capital will be tied up in concentrates and briquettes, and an additional amount in current accounts, so that $350,000 would not be too much for the total capital required.

Operating Expenses

Power Plant, labor required		
Engineers	1 man per shift	2 men per 24 hours
Engineer's helpers	1 man per shift	2 men per 24 hours
Firemen	3 men per shift	6 men per 24 hours
Coal wheelers	2 men per shift	4 men per 24 hours
Total	7 men per shift	14 men per 24 hours

2 Engineers at $2.75	$ 5.50
2 Helpers at $2.25	4.50
6 Firemen at $2.00	12.00
4 Coal wheelers at $1.50	6.00

$28.00 total labor bill for 24 hours.

It is assumed that the concentrating and briquetting mills are each charged with one-half of the above costs, that is $14.00.

Concentrating Mill, labor required:

Master mechanic	1 man	1 man per 24 hours
Dumping and weighing crude ore	4 men per shift	8 men per 24 hours
Crushers	3 men per shift	6 men per 24 hours
Ball mills	2 men per shift	4 men per 24 hours
Separators	2 men per shift	4 men per 24 hours
De-waterizers	2 men per shift	4 men per 24 hours
Oiler	1 man per shirt	2 men per 24 hours
Electrician	1 man	1 man per 24 hours
Weighing and loading concentrates	3 men per shift	6 men per 24 hours
Foremen	1 man per shift	2 men per 24 hours
Totals	20 men per shift	38 men per 24 hours

1 master mechanic at $4.00	$ 4.00
34 men per 24 hours at $1.75	59.50
1 electrician at $2.50	2.50
1 night foreman at $3.00	3.00
1 day foreman at $3.50	3.50
	$72.50 total labor bill per 24 hours.

Cost per ton Concentrates:

Concentrating mill labor	$72.50
Power plant, labor	14.00
	$86.50 labor bill per 500 tons of concentrates produced = $0.173 per ton.

Labor	$0.173
Power	0.10
Repairs	0.10
Oil and miscellaneous	0.127
	$ 0.50 cost per ton of concentrates.

Briquetting Department, labor required:

Feeding presses	6 men per shift	12 men per 24 hours
Attending presses and loading cars	12 men per shift	24 men per 24 hours
Charging furnaces	6 men per shift	12 men per 24 hours
Discharging furnaces	6 men per shift	12 men per 24 hours
Gas producers	2 men per shift	4 men per 24 hours
Foreman	1 man per shift	2 men per 24 hours
Total	33 men per shift	66 men per 24 hours

64 men at $1.75	$112.00
1 foreman at $3.00	3.00
1 foreman at $3.50	3.50
	$118.50 total labor bill per 24 hours.

Cost per ton of briquettes:

Briquetting plant, labor	$118.50
Power plant, labor	14.00
	$132.50 labor bill per 520 tons of briquettes produced = $0.254 per ton.

If producer gas is used as fuel, about 35 tons of coal will be required per 24 hours. Assume value of coal to be $3.50 per ton = $122.50 per day or $0.233 per ton of briquettes.

Labor	$0.254
Fuel	0.223
Power	0.030
Repairs	0.10
Oil and miscellaneous	0.043
	$0.65 cost per ton of briquettes.

Total cost of one ton of briquettes:

Two tons of crude ore at $1.25 per ton delivered	$2.50
Concentrating	.50
Briquetting	.65
	$3.65
Depreciation and amortization at 15 per cent. on $350,000	.35
Total cost of production	$4.00

Market Prices of Concentrates and Briquettes

During the past year the following prices have been paid for concentrates containing 68 per cent. of iron: for home consumption in Sweden about $3.65 per ton on cars at concentrators; for export containing 65 per cent. of iron and about 10 per cent. of water $4.25 per ton, at port of export.

For briquettes containing 65 per cent. iron, sales have been made at $5.45 per ton f.o.b. port of export. Germany has contracted for about 10,000 tons this year at $5.25 at port of export. Purple ore briquettes from Helsingborg bring about $6.00 per ton Stockton. Pyrites residues briquettes from South Wales command from $5.50 to $6.35 delivered, according to cost of transport.

In comparison with the best of the Old Range Lake Superior Bessemer ores, which this year are quoted at $5.00 per ton at lower lake ports, for 55 per cent., iron content or 9.09 cents per unit, the briquettes should have no trouble in commanding and holding an equal price per unit or $6.00 per ton, with the probability of exceeding this price, as the supply of lake ores diminishes.

The return on investment may be summed up approximately as follows:—

Cost of producing briquettes at the works	$4.00
Freight, by rail and boat to lower lake ports	1.25
Royalty per ton	.10
	$5.35 per net ton
Selling price	$6.00 per net ton
Profit	0.65 per net ton
Annual tonnage	150,000 net tons
Annual profit 150,000 tons at 65 cents	$97,500
Return on investment of $350,000	27.8 per cent.

It may be of interest to state here what has already been pointed out in another part of this report, that in 1907 Ontario furnaces smelted 508,883 tons of iron ore. Of this amount 388,727 tons or 76.3 per cent. were imported from the United States, and 120.156 tons or 23.6 per cent. were mined within the Province. There should be no difficulty in disposing of 150,000 tons of briquetted ores in Ontario alone, and in fact, if such an industry were established, there is every probability that the demand for the briquettes would exceed the supply.

Cost of Dry Magnetic Concentrating Plant, 1,000 Tons per Day.

The following estimate has been prepared by Allis-Chalmers-Bullock, Limited, to whom the writer wishes to make thankful acknowledgment for the assistance rendered. In presenting this estimate, it is regretted that an insufficiency of data makes it impossible to afford a definite comparison with the Gröndal or wet system of concentration. However if it is studied in conjunction with the description of the dry concentrating plants given in another part of this report, especially the Lyon Mountain mill, some idea will be gained of the relative merits of the two systems under consideration.

It may be advantageous to emphasize here one or two of the main points of difference between dry and wet magnetic concentration. In the first place, dry concentration is applicable only when the crude ore does not require fine grinding to free the particles of magnetite from adhering particles of gangue, and as the process is operated dry the ore must be thoroughly dried before going to the magnetic separating machines. The wet process is specially applicable where fine grinding is necessary, and because the grinding and separating of the ore is effected with the use of a considerable amount of water, no preliminary drying is required; although the resulting concentrates must be partially de-waterized before being briquetted or nodulized. The process of dry separation, requiring no water, does away with the expense of installing pumping machinery, piping, launders, etc., and the operation of the mill is simplified, especially during the winter months, when the danger of freezing would necessitate heating the mill water. Also, the concentrator being dry obviates the use of de-waterizing apparatus before nodulizing.

The process of nodulizing claims some attention, and it should be stated here that this system of agglomerating fine ores has met with considerable success at several American plants. The essential points of difference between the nodulizing kiln and the Gröndal briquetting furnace are that the former has a greater tonnage output per unit, but requires more fuel per ton to operate than the latter. The cost of installing a battery of kilns would be considerably less than the cost of installing briquetting furnaces for any given output, and it is probable that the operating expenses per ton of product would be lower for the kilns, notwithstanding the fact that the briquetting furnace is more economical of fuel. It has been stated that the nodulizing kilns are not good de-sulphurizers, but a glance at the analyses of concentrates and nodules made at the Lebanon plant of The Pennsylvania Steel Company will demonstrate that the kilns are very efficient in this respect, reducing the sulphur from 1 per cent. in the concentrates to 0.03 per cent. in the nodules. The nodules are hard and porous, not so porous as the Gröndal briquette, but they have sufficient porosity to greatly promote their rapid reduction in the blast furnace. And the smaller size of the nodule compared with the briquette admits of more rapid reduction by the furnace gases, in the same way as a small lump of sugar is dissolved in water more quickly than a large lump. If there is one argument against the nodules, it is that they are not sized; they are of any and all sizes from pieces as large as a hen's egg down to particles not larger than a grain of wheat. This means that when charged in the blast furnace the smaller particles fill up the interstices between the larger lumps and form a layer less easily penetrable by the ascending gases than a charge of briquettes under similar circumstances; but there are very few furnacemen in the country who would raise serious objection to the nodules on this score.

The following letter from Mr. P. J. Lynch, manager of the Toronto branch of Allis-Chalmers-Bullock, Limited, is of interest and gives any explanation necessary for a proper understanding of the estimate.

Several months ago we received an enquiry for data officially treating on the subject of magnetic concentration of iron ore.

It was only to-day that we were able to complete our data which we wish to offer you, and we are attaching hereto a copy of estimate for the mill and a list of the necessary motors to drive the mill, with the suggestion of either a 500-k.w. turbine or a cross compound engine direct connected to generator.

In regard to the installation of a de-sulphurizing plant, this part of the plant is a bare estimate, but we could in all probability furnish a satisfactory plant for the same as outlined.

The Allis-Chalmers Company in the United States have furnished practically all the machinery and equipment which is now being used in the magnetic separating of the magnetite ore deposits in the United States occurring in central and eastern New Jersey. One of the principal mills furnished by this company is known as the Lyon Mountain mill, otherwise the Chateaugay Iron Company operated by the Delaware and Hudson Railroad Company. This mill is handling fine disseminated magnetic iron ore which requires preliminary crushing to ¼-inch size, at which point the first magnetic separation begins. Unreleased parts of ore are then subjected to a finer crushing, and again magnetically separated, so that the extraction of the total magnetite contents of the ore will be higher than 80 per cent.

In some cases where the iron occurs in larger particles, magnetic separation can begin at one and one-quarter inch size. This is commonly known as "cobbing," and depends entirely upon the nature of the deposit to be handled.

The mill is entirely automatic in operation, the material being handled by conveyors and elevators, the concentrates being conveyed to proper concentrating bins and the dry tailings by stacking conveyors.

In common magnetic separation, it is necessary to dry the ore after crushing to the proper size, and this mill includes the necessary rotary dryers.

The mill would be adapted to handle from 1,000 to 1,200 tons of crude ore in 24 hours. The Allis-Chalmers Company have developed a special line of crushers and rolls, and our machinery is especially adapted for hard continuous work in separating iron ores, and as we have had the experience we are able to furnish a type of machinery which has proven satisfactory.

In quoting you a price for the above mill, we are giving you a quotation on a complete outfit, and are mentioning the different machines that would be required for

this work. The price of course is for machinery f.o.b. our factories Chicago and Montreal, and we cannot in any way give an idea of the cost of an erected plant, as local conditions govern and depend upon the character of mill site, kind of buildings to be used, and many other elements.

If my recollection is correct, you also requested some information on the de-sulphurizing of iron ores, as the magnetic deposits in Canada contain considerable sulphur. After the ore has been concentrated, the concentrates would then be passed to six 7 x 100-foot kilns, where the material would not only be de-sulphurized, but also nodulized by the use of powdered coal with the necessary tube mills, fans, feeders, etc. For such an equipment you will find the price and weight stated in the attached copy of estimate.

We are not making you a price on this machinery, but if it is required kindly advise and we will send you detailed prices on the above.

Details of Cost

Note.—Prices on concentrating plant and de-sulphurizing kilns, f.o.b. Chicago, price on power plant, f.o.b. Montreal. Grizzlies to be made of R. R. iron.

		Weight, lb.	
1 No. 8 Gates Breaker K—Manganese head and Comb Concaves		101,200	
1 No. 6 Ditto		47,050	
1 40 inch x 12 feet Gates Screen		9,040	
1 40 inch x 30 inch Rolls		50,000	
2 6 feet x 60 feet Dryers with stacks complete		160,000	
1 No. 8 Gates Elevator—50 feet ctrs		16,900	
Structural steel storage bins for dried ore, 50 tons		100,000	
4 Style H wall type feeders		2,220	
4 Sets 40 inch x 15 inch Anaconda Rolls		152,000	
2 40 inch x 16 feet Gates Screens with dust jackets		20,000	
2 18 inch Mill Elevators—60 feet ctrs		11,150	
2 40 inch x 16 feet Gates Screens		20,000	
4 Sets 40 inch x 15 inch Anaconda Rolls		152,000	
4 Roller Type Feeders		2,000	
2 24 inch coarse cobbing magnetic drum separators		8,000	
8 Belt separators		16,000	
Conveying System—including concentrates, storage system and tailings stacker system		75,000	
Shafting, Pulleys, Boxes, Belting, etc. for driving the above		150,000	
Drawings and Engineering			
		1,097,540	$90,351.00
Power and Motors:			
For Crushers	75 h. p.	3,680	
" Screen, big rolls and dryers	50 "	2,650	
" 4 roughing rolls	75 "	3,680	
" 4 screens, elevators	40 "	2,335	
" Finishing Rolls and Separators	100 "	5,000	
" Conveying system	60 "	2,860	
	400	20,205	$5,282.00
80 per cent. Power Factor:			
1 500 k. w. Cross Compound Engine		107,000	$17,500.00
For de-sulphurizing kilns, based on 1,000 tons crude ore 80 per cent. extraction; 800 tons. from 50 per cent. to 65 per cent. FE_2O_3 or 600 tons concentrates			
6 7 feet x 100 feet kilns complete with stack		780,000	
Coal pulverizing system		75,000	
Elevators for concentrates and pan conveyor for hot nodules and de-sulphurizing ore		100,000	
		955,000	$57,000.00

IV.—Manufacture of Iron and Steel in Ontario

Before attempting a description of the various iron works operating throughout the Province, it may be desirable first of all to make some explanation concerning the various processes by which the crude ore is converted into pig iron, and subsequently into the finished steel.

A bare summary only can be given here. If fuller information is desired the reader should consult some of the standard text books on the subject, a list of which will be found at the end of this report.

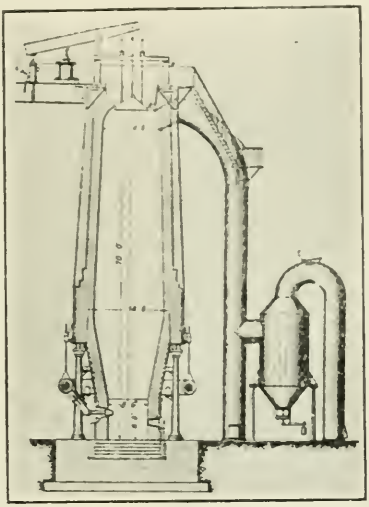
The Process of Smelting Iron Ore

Iron ore as it is mined from the ground is natural iron rust, a combination of iron and oxygen, and if we take away the oxygen the iron is left by itself. Carbon in any form possesses the power of breaking up this compound of iron and oxygen, by uniting with the oxygen and setting the iron free. In actual practice this carbon may be

coke, charcoal, anthracite or bituminous coal. When any of these fuels are mixed with iron ore and heated red hot, the separation of iron and oxygen takes place. This is, however, only the initial stage of the process. In order to melt the iron and separate it from the earthy parts of the ore and the fuel ash, another substance, limestone is added; the lime combining to form a fusible slag with the earthy portions of ore and fuel, the whole operation being conducted in a huge shaft from 75 to 100 feet high, called a blast furnace, filled with alternate layers of fuel and iron ore mixed with limestone, a superheated air blast entering at the bottom.

The Blast Furnace

The modern blast furnace consists of a large cylindrical tapering steel shell carried on a mantle supported by massive cast iron columns, the steel shell being lined with fire brick; and a lower portion below the mantle also constructed of fire brick bound with iron bands, tapering to a circular well at the bottom. That portion of the



A semi-modern blast furnace equipped with single bell and hopper, showing dust catcher attachment.

furnace above the mantle is called the "stack," below the mantle the tapering section is termed the "bosh," and the straight circular part below the bosh is called the hearth or crucible of the furnace.

Reactions in the Furnace

The raw materials are charged at the top, the furnace being kept full all the time with a column of fuel, ore and limestone, fresh additions being made from time to time as the column sinks by reason of its lower section being melted away with the heat developed in the region of the bosh. The air previously heated to redness enters at the bottom and meeting the fuel, the oxygen of the blast is quickly converted into carbonic oxide gas by re-acting with the carbon, as follows:

$$C + O = CO,$$
$$\text{or } C + 2O = CO_2,$$
$$CO_2 + C = 2\,CO.$$

This volume of gas sweeps up through the column of descending materials, re-acting with them in a gradually lessening degree as the top or cooler part of the furnace is approached. Almost as soon as the iron ore enters the top it is attacked by the carbonic

oxide gas, reduction of the ore being accomplished in a cycle of reactions of which the following are representative, in the order in which they occur:

$$3\ Fe_2O_3 + Co = 2\ Fe_3O_4 + CO_2,$$
$$Fe_3O_4 + CO = 3\ FeO + CO_2,$$
$$FeO + CO = Fe + CO_2.$$

All of the ore, however, is not completely reduced by the gases and descends until reaching a temperature of about 750 degrees F., when it is attacked by solid carbon, according to the following reaction:

$$Fe_2O_3 + 2C = 2\ FeO + 2\ CO.$$

At a still lower point where the temperature is about 1,300 degrees F., solid carbon begins to reduce FeO as follows:

$$FeO + C = Fe + CO$$

At about 1,475 degrees F., practically all of the iron is in a spongy metallic form, and at this point the limestone which was charged at the same time as the ore begins to be decomposed by the heat:

$$CaCo_3 = CaO + CO_2.$$

The carbonic acid gas from the limestone joins the other furnace gases, while the lime combines with the earthy impurities of ore and fuel forming a fusible slag, which trickles down and collects in the hearth.

During the time the ore is being reduced the spongy iron is absorbing carbon which lowers its melting point until finally it is sufficiently liquid to run down through the white hot fuel below, absorbing more carbon and trickling into the hearth along with the slag. The iron, being the heavier, sinks to the bottom of the crucible, while the slag floating on its surface is drawn off from time to time through an opening in the side of the hearth. If the furnace is in good working order, no unreduced ore or raw limestone will exist below the upper portion of the bosh, the bosh and part of the hearth being filled with incandescent fuel.

In order to protect the brick work of the bosh against the scouring action of the hot slag, it is provided with a series of hollow wedge shaped bronze castings, through which cold water is kept circulating. The hearth is protected by a circular steel jacket cooled by exterior water sprays. Other devices of bosh and hearth cooling are in use, but the above are typical of modern practice.

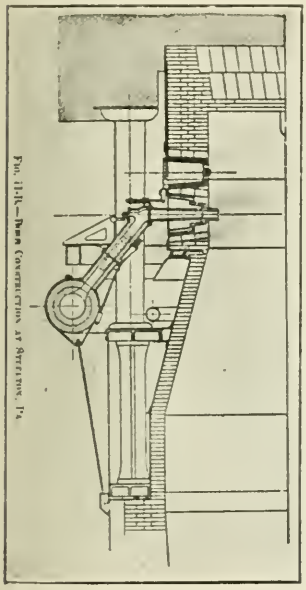
The heated blast is delivered from the stoves through a large pipe main encircling the furnace just below the mantle, called the bustle pipe, the air being conveyed in short goose neck connections from the bustle pipe to circular openings in the hearth called tuyere holes. The tuyeres proper are hollow, circular castings of bronze, projecting a few inches into the furnace, and are supplied with a constant stream of cold water, the tuyere and the goose neck connections from the bustle pipe being joined by short cast iron tubes termed blow pipes or belly pipes. To protect the tuyere openings in the brick work, large hollow bronze castings called tuyere coolers, encircling the tuyere and blow pipe, are placed in these openings extending through the total thickness of the brick work to the inside of the furnace. The tuyere coolers are also supplied with a constant stream of cold water.

The iron is tapped from the furnace every four or six hours, depending on the amount made, from the iron tapping hole, which is placed in front of, and at the lowest point of the hearth. After casting, this hole is usually plugged with balls of fire clay, forced into the opening by means of a steam ram, termed a mud gun.

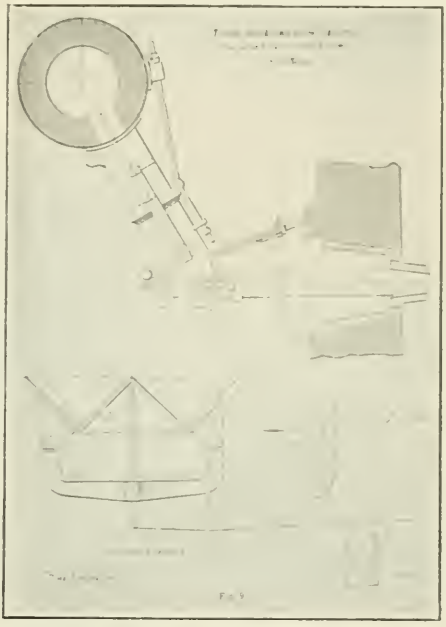
The slag is allowed to run off at regular intervals, through an opening in the side of the hearth called the cinder notch placed about a foot below the tuyeres. The cinder notch opening is protected by a water cooled circular casting of the same type as the tuyere coolers, and is provided at its inner end with a smaller casting, much like a tuyere, projecting into the bath of slag, the outer casting being termed the cinder

cooler, and the inside smaller casting, the cinder monkey. The slag flows through the cinder monkey to a trough leading to the ladles or cinder pit, the monkey being stoppered with an iron plug called a bot, when the furnace gives no more slag. This operation of allowing the slag to run off is described as flushing.

In former times furnace tops were open, consequently the waste gases escaped into the atmosphere and were lost. In modern practice the waste gases issuing from the top of the furnace are conducted to the ground level by a large pipe main, termed the downcomer, which at its lower end enters a huge cylindrical apparatus called the dust catcher. The dust catcher, as its names implies, is for the purpose of cleansing the gas as far as possible from dust, and is connected with the boiler room and hot blast stoves by separate mains, conducting the gas for use under the boilers in the making of steam and to the hot blast stoves for the purpose of heating the blast.



Blast furnace; bosh construction.



Blast furnace; tuyere attachments.

The Hot Blast

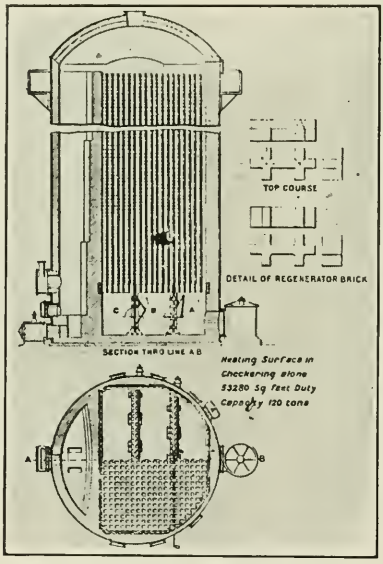
The hot blast stoves of which there should be at least three, and preferably four, to each furnace, are large, air-tight steel cylinders from 60 to 100 feet high and about 20 feet in diameter. These stoves are generally divided into two fire brick sections, a combustion and a checker work chamber, the latter containing some hundreds of small vertical flues, in construction resembling a honey comb. Gas and air are admitted to the bottom of the combustion chamber; the products of combustion pass up this chamber and down through the system of checker work flues, bringing the brick work to a red heat and finally escaping through a chimney valve to the draft stack. After the stove has been heated in this manner for an hour, the gas and chimney valves are closed, and the cold blast from the engines admitted passing through the checkers in the opposite direction to that in which the gas travelled, absorbing heat from the hot brick and flowing out through a hot blast valve to the air mains leading to the furnace bustle pipe. At the end of the second hour, the next stove which has been undergoing the heating up process is put on air, and the stove which has just been used for heating the air is again put on gas; the cycle proceeding in rotation with all three or four stoves. In this way

the blast is raised to a temperature of 1,200 degrees F. or over, as may be required by the furnaceman; the degree of heat being registered by pyrometers and controlled by the stove tender.

The blast is supplied by large blowing engines ranging from 500 to 2,500 h.p. each, capable of delivering from 20,000 to 50,000 cubic feet of free air per minute at a pressure of from 10 to 30 pounds per square inch. Furnaces using coke as fuel usually require from four to five tons of air for the production of each ton of pig iron.

The boiler plant, for generating steam to supply the blowing engines and other auxiliary engines about the plant, should be of ample capacity to meet all possible requirements, and the boiler settings should be designed wth the view of burning the furnace gases in an economical manner.

Of late years large gas blowing engines have been installed at many German plants, and at a few English and American steel works, the inefficient and costly boiler batteries being replaced by gas washing apparatus which thoroughly cleanses the gas before it goes to the engines. In this way a great deal of surplus power is generated electrically, which may be transmitted to more distant points.

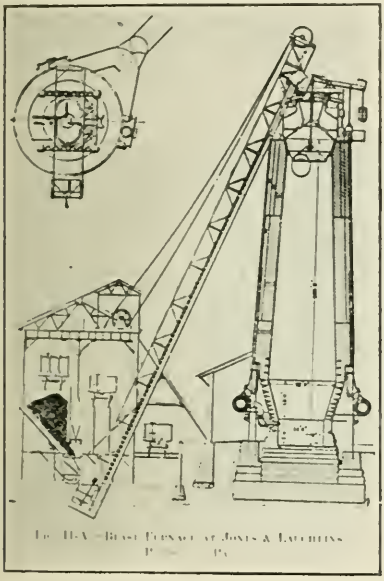

TOP COURSE
DETAIL OF REGENERATOR BRICK
SECTION THRO LINE A B
Heating Surface in Checkering alone 53280 Sq feet Duty Capacity 120 tons

A blast furnace hot blast stove.

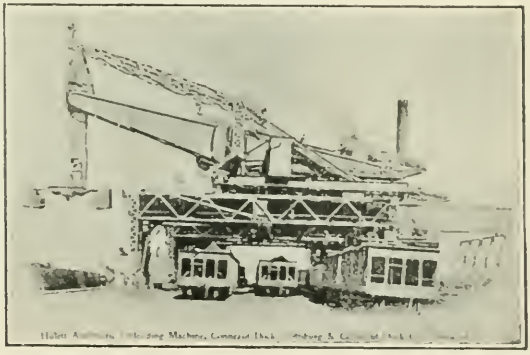
Charging the Furnace

The modern furnace is equipped with an incline skipway hoist and an automatic top-charging gear for handling the 2,000 tons or more of stock, used daily in one of the larger furnaces. The skipway is provided with two cars that are alternately being filled at the ground level and discharged into a receiving hopper at the furnace top. At the foot of the skipway, and extending for some distance on either side, is a series of bins or pockets, provided with a system of railroad tracks over their tops, connecting with the general yard. The ore, coke, and limestone cars are transferred over and dump their contents into the bins, the furnace supply being drawn off through bottom chutes into an electrically operated scale car, that weighs the ore and limestone automatically and transfers them to the skipway where they are dumped into the skip cars and hoisted to the top. The coke supply is held in the largest bins immediately next to the skipway and is chuted direct into the skip cars, the chutes being provided with screens arranged to get rid of dust and breeze (fine coke).

The furnace top is usually equipped with two superimposed receiving hoppers each provided with an iron cone called a bell, closing the hopper bottoms. The upper or small hopper receives the ore first and when full, its bell operated by a lever and counterweight is opened, discharging the contents into the lower hopper. This operation is repeated until enough stock has been hoisted for one charge, then the upper bell remaining closed, the lower or main bell also operated by lever and counterweight is opened, and the charge precipitated into the furnace. In this way the furnace gases are prevented from escaping during the operation of charging. Sometimes an additional piece of apparatus called a distributor is added. Briefly described, this consists of a sheet steel cylindrical casing, mounted on rollers above the large bell and free to revolve about its vertical axis. The inside of this casing is provided with a deflecting chute so arranged that when a skip load of stock is dumped into the distributor, the material is deposited over a certain sector of the charging bell below; the distributor is then revolved through an angle of say 90 degrees, and the next skip load of material



A modern blast furnace equipped with automatic charging gear.



Hulett automatic ore unloading machine.

deflected so as to cover the adjacent sector. By repeating this operation for each skip load, it is apparent that an even distribution of material around the bell is obtained, the coarse and fine particles being averaged evenly throughout the charge. An even distribution of stock is of vital importance for the efficient operation of the furnace, because if the coarse and fine material are not evenly distributed the ascending gases will rush through the side containing the coarser material, causing faster working than on the opposite side where the material is finer. This will result in a very irregular condition throughout the furnace from the top to the hearth.

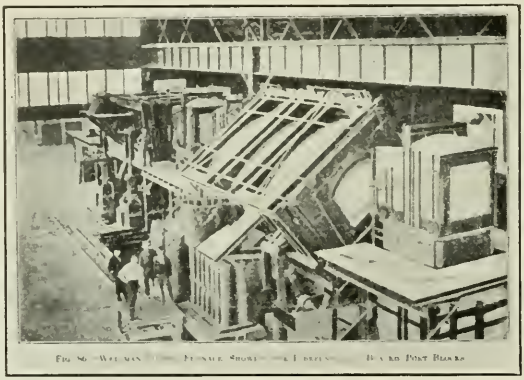
Making the Cast

When the furnace is ready for casting, an opening is made in the tapping hole, several men drilling through the clay plug by means of long drills and hammers. Out of this hole will flow the iron and with it a considerable amount of slag, through a short iron trough to a sand runner (ditch) where it meets the dam and skimmer. The skimmer is an iron or fire brick plate placed across the runner within a few inches of

the dam and between it and the tapping hole, the iron flowing underneath this plate and over the dam; the slag by reason of its floating on top of the iron is deflected by the skimmer to one side and flows to the cinder ladles.

Foundry iron (iron for foundry purposes) is usually cast in sand because then the pigs have a coarse open grain desired by all foundrymen. A large cast house in front of the furnace contains the casting floor, which is made up as follows: A long narrow ditch or runner is dug from the end of the casting trough down the centre of the house, and from the runner, smaller channels called sows are run about every four feet at right angles, to the side of the house; these each supplying 20 or 30 moulds that lie between and at right angles to successive sows. One sow and its compliment of moulds called pigs, is termed a bed or comb, and there may be anywhere from 15 to 35 beds at one cast, holding from 30 to 70 tons of iron.

After the iron has cooled down to red heat the pigs are pried off from the sows by steel bars, the sows broken up into short lengths, and the whole cast cooled by water sprays. The iron is then conveyed to railroad cars alongside the cast house and shipped. The latest practice for handling the iron is to pick up each comb of pigs when cold, by an overhead travelling crane, which carries them to an hydraulic pig breaker placed



A Wellman open hearth tilting furnace.

at the end of the cast house. This method has the advantage of being more rapid and is of course a saving of labor.

When Bessemer or basic iron is being made for subsequent conversion into steel, it is preferably not cast in sand, as the adhering silica (sand) would be detrimental in the steel making process. Accordingly the molten iron after it passes the dam is distributed to half a dozen brick-lined ladles standing on a standard gauge railroad track beside the cast house, and is taken to the steel works for direct use in the molten condition.

Sometimes the liquid iron is not wanted at the steel department, its disposal being provided for by a pig-casting machine. There are several types of these machines in use, but the most common are the Uehling, and the Heyle and Patterson. Their construction is essentially a long series of hollow cast iron moulds carried on an endless chain travelling over heavy sprocket wheels. The molds overlap each other slightly, the iron filling them successively as they travel slowly past the pouring platform, and are emptied by the chilled pigs falling out at the other end. This method of casting is specially applicable when the iron is afterwards used for steel making, but as the chilled pigs have not the open fracture of the sand cast pigs, the latter method is preferable in the manufacture of foundry iron.

Analyses of Pig Irons Used for Different Purposes

	Silicon Per cent.	Sulphur Per cent.	Phosphorus Per cent.	Manganese Per cent.	Carbon Per cent.
Foundry No. 1	2.5-3.0	0.02-0.05	0.3-1.5	0.2-1.6	3.0-4.0
Foundry No. 2	2.0-2.50	0.03-0.05	0.3-1 5	0.2-1.6	3.0-4 0
Foundry No. 3	1.50-2.0	0.045-0.05	0.3-1.5	0.2-1.6	3.0-4.0
Gray Forge	0.5 1.5	0.045-0.06	0.3-1.5	0.2-1.6	3.0-4 0
Malleable Bessemer	0.75-1.75	0.02-0.05	0.10-0 25	0.30-0.60	3.0-4.0
Bessemer	0.75-2.0	0.03-0.075	under 0.10	0.3-0.5	3.0-4.0
Basic Bessemer	0.53 1.00	0.05-0.09	1.0-3.0	1.0-2 0	3.0-4 0

Pig iron produced in the blast furnace contains from 92 to 96 per cent. of iron and from 8 to 4 per cent. metalloids, which are carbon, silicon, phosphorus, manganese, sulphur, and sometimes copper, chromium and titanium. In this condition the iron may be used for ordinary foundry work, but as it is weak and brittle, it is unfit for extensive engineering purposes. Therefore, in order to purify the metal by converting it either into wrought iron or steel it must be subjected to some one or other of the following processes:

The Puddling Process

The essential feature of this process is the exposure of pig iron to a hot flame on a hearth composed of iron oxide (iron ore) whereby the metalloids combine with the oxygen of the ore leaving the iron practically pure.

The furnace constructed of fire brick is of a low rectangular design, provided with a grate at one end, fired with bituminous coal. The products of combustion rising over a bridge wall reverberate from the low roof down upon the charge of pig and ore contained in the hearth and escape through the chimney at the farther end. The furnaces are built either singly or in pairs back to back, the latter method being more economical, as it reduces the amount of heat lost by radiation.

The pig iron is charged cold through side doors, and is melted down as rapidly as possible. As soon as the iron is liquid the iron oxide (very pure iron ore or mill scale) is added, the whole charge being thoroughly mixed and cooled down until the temperature is about right for the slag to commence the oxidation of the phosphorus and silicon. As soon as this re-action starts light flames break through the layer of slag resulting from the oxidation of the carbon, and as the carbon monoxide forms more and more rapidly, the whole bath is violently agitated by its escape, this stage of the process being called the boil. During the boil the puddler stirs the charge continually with a long iron rabble, until finally most of the impurities are removed and the metal begins to "come to nature." The next step is the balling up of the mixture of slag and partially welded iron particles until three or four balls are obtained, each weighing from 100 to 200 pounds, the whole operation taking from one to two hours for each heat. The balls are then taken out of the furnace and are either squeezed by a mechanical squeezer, or shingled (hammered) to get rid of the larger portion of slag held throughout the mass and also to weld more firmly together the particles of iron.

The material thus obtained is called "muck bar" and is cut up into sections and piled, and after being reheated to a welding temperature is rolled again; this time forming the "merchant iron" of commerce

The Bessemer Process of Making Steel

This process consists of blowing cold air through a mass of liquid pig iron, the oxygen of the blast uniting with the impurities in the metal and resulting in the formation of gas and slag, the finished product being known as steel.

The operation is conducted in a pear shaped vessel lined with refractory material, called a converter. Air is admitted through numerous tuyere holes in the bottom, the blast pressure being sufficient to keep the metal from running into the openings. The

converter is carried by side trunnions on bearings suported by a stout iron framework and may be turned on its trunnions by a pinion, geared to a rack which is attached to a double acting hydraulic ram. The capacity of the vessel varies considerably, in small plants not holding more than five tons, while in the larger works converters holding 20 tons are frequently used.

The construction consists of a steel shell lined with refractory material about one foot in thickness. It is divided into three parts, called the bottom section, the belly, and the nose. The bottom section may be and is removed frequently for repairs to the tuyeres, which are rapidly worn away; the belly and nose sections lasting much longer are not disturbed until a complete re-lining is necessary.

Two distinct types of lining are employed depending upon whether the pig iron for conversion contains little or much phosphorus. If the iron does not contain more than 0.10 per cent. of phosphorus, the lining is made of silicious material, the blowing of the metal being then termed the acid bessemer process; but if the pig iron contains from 2.5 to 3 per cent. of phosphorus, the lining is then made of basic material, and

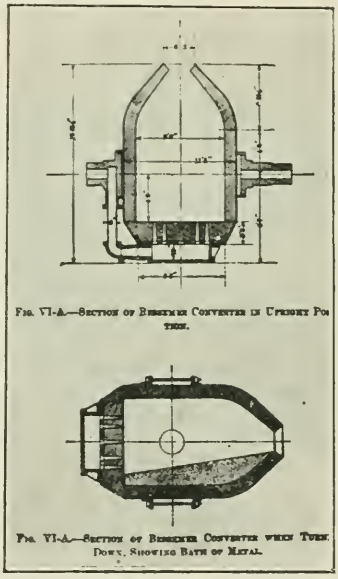


FIG. VI-A.—SECTION OF BESSEMER CONVERTER IN UPRIGHT POSITION.

FIG. VI-A.—SECTION OF BESSEMER CONVERTER WHEN TURNED DOWN, SHOWING BATH OF METAL.

Bessemer converter in upright and horizontal positions.

the operation is called the basic Bessemer process. The essential difference between the two methods is, that no phosphorus is eliminated in the acid process, while in the basic process its removal is easily accomplished. Steel for engineering purposes should contain under 0.10 per cent. of phosphorus; if it contains more it is not trustworthy, and as the acid bessemer process will not eliminate phosphorus, pig irons, low in that element, are required in this method for the manufacture of first-class steel. Such irons are called Bessemer irons and usually command a high price.

The acid process is the one almost entirely used in America, the basic process being more generally applied in Germany and to a lesser extent in Great Britain.

The molten iron for the converter is supplied from a huge storage tank of steel lined with fire brick, called a mixer, holding from 150 to 300 tons of hot metal. This mixer is kept hot by gas and not only acts as a receiver but as its name implies mixes the various additions of pig iron made from time to time from the blast furnaces, thus averaging the quality of the metal. The hot metal is poured from the mixer into a ladle and conveyed to the converter, which is turned down to the horizontal position

to receive the charge. After the metal is poured in, the blast is started and the vessel is turned back into the vertical position, the air pasing through the 18 or 20 inches of metal, oxidizing the impurities and raising the temperature of the bath considerably. During the early stage of the blow a short flame appears at the mouth, gradually increasing in size and brightness until splashes of slag and some metal are ejected, affording evidence of the violent re-action going on inside the vessel. This is called the "boil," and is due largely to the evolution of carbonic oxide from the combustion of the carbon in the metal. Gradually the action becomes less violent and the flame drops, finally disappearing almost entirely, this stage of the process being known as the "drop of the flame." The converter is then turned down immediately to the horizontal position, and the blast of air is stopped. The metal is now almost entirely rid of the impurities that existed in the original pig iron, but if poured in this condition would give considerable trouble in rolling and be unfit for use. Therefore an alloy of manganese, iron and carbon called ferromanganese, or a similar alloy containing less manganese called spiegeleisen is added, which raises the carbon content of the steel to the desired point. Ferromanganese is usually added in small lumps if mild steel is being made. For steel rails spiegeleisen is always added, being melted down in a cupola before it is charged to the bath. Whichever alloy is used, the function of the added material is the same, *i. e.*, to raise the carbon content of the metal and also to eliminate a large amount of oxygen contained in the steel resulting from the blow. The exact proportion of ferromanganese or spiegel necessary for these re-actions is carefully calculated beforehand, so that the finished steel shall have the desired chemical composition.

The metal is now poured into a brick-lined ladle which is picked up by an overhead crane and the steel teemed into a row of cast iron ingot moulds, standing on small cars. When the ingots are sufficiently solid they are taken to the stripper, which consists of a machine operated either electrically or by hydraulic power for pulling the iron moulds from off the ingots. The stripped ingots then go to the soaking pits, which are large hole furnaces, the ingots remaining in the soaking pits until the heat is evenly distributed throughout so that it will work well under the rolls. From the soaking pits the ingots are conveyed to the rolling mills and are rapidly worked into finished articles, such as rails, structural shapes, plates, wire, etc., etc.

The Open Hearth Method of Steelmaking

In this method of manufacturing steel the impurities in the pig iron are not eliminated by blowing air through the metal as in the bessemer converter, but are got rid of by the action of gas, and slags formed by the addition of pure iron ore or limestone to the bath of metal.

The furnace consists of a large rectangular hearth built of refractory material, upon which the pig metal is melted and the process of its conversion into steel is carried out. At each end of this hearth are two chambers filled with fire brick checker-work, the pair of chambers at one end each conducting a supply of air and gas separately, which unite and burn in the hearth of the furnace, the products of combustion passing through the checker-work chambers at the opposite end, and heating the brick work to a high temperature. In a short time the direction of the flow of gas and air is changed, the supply being now admitted through the heated chambers, and the products of combustion passing out through the comparatively cold chambers at the other end. At regular intervals this alternation of the flow of gas and air is effected by means of reversing valves placed between the two chambers and controlled by the man in charge of the furnace.

The central portion of the furnace hearth where the steel is made is called the laboratory, and the checker-work chambers are called regenerators, the furnace being constructed on what is called the regenerative principle.

The regenerators are the essence of this Siemens type of furnace: they store up heat, caught by the large surface of brick work, from the escaping gases and return

it to the furnace on the next reversal of gas and air. In this way the regenerators are heated to approximately 2,000 degrees F., giving up their heat to the air and gas, which entering the furnace in a highly pre-heated condition, produce in the laboratory of the hearth a temperature of about 3,000 degrees F.

The original furnace as devised by Siemens was stationary, the regenerators and hearth being connected by solid brick work construction, and the finished steel tapped out through a hole in the bottom of the hearth. Later types invented by Campbell and Wellman are constructed so that the hearth may be tilted, the hearth being built separately from the regenerators, rolling on steel rockers or turning on rollers about its central axis, the tilting being controlled by hydraulic power. Both types have certain advantages which may be summed us as follows:

Stationary furnaces are cheaper to build and last much longer, the frames, roofs, ports, etc., etc., not being subjected to the heavy strains experienced in the tilting types. Tilting furnaces, although more expensive to instal and keep in repair, have

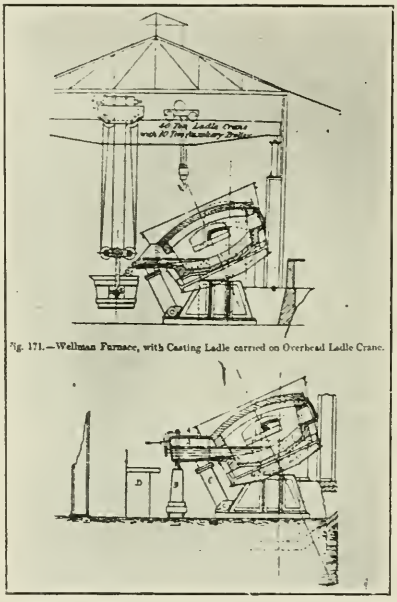


Fig. 171.—Wellman Furnace, with Casting Ladle carried on Overhead Ladle Crane.

Wellman tilting furnace showing casting ladle.

the advantage of being able to cast their contents at a moment's notice, the tap hole being above the bath. This is a valuable factor in making certain special steels. There is no trouble in opening the tapping hole so often experienced in the stationary type, and as the bottom may be drained by tilting the furnace, repairs are easily accomplished.

The fuel is usually supplied by a battery of gas producers, placed behind the furnaces, the size and number of producers depending upon the requirements of the system of furnaces. Natural gas is also used, and because of its cheapness and calorific value is highly esteemed. Coke oven gas and crude petroleum are utilized to some extent, but in the majority of plants operating in America the fuel is either producer or natural gas.

Acid Open Hearth Steel

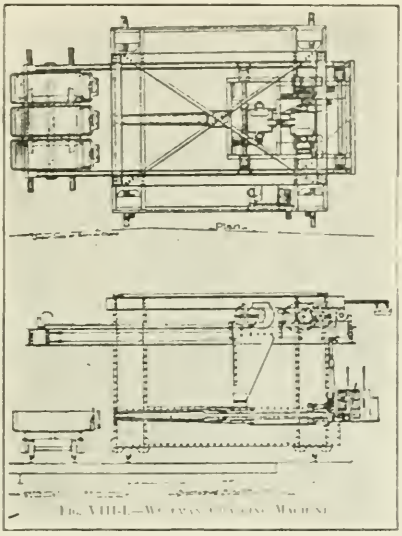
There are two distinct methods in open hearth practice, called respectively the acid and basic open hearth processes. In the first method the furnace hearth is lined with silicious material and a mixture consisting of pig iron and scrap is charged and melted; no limestone is used for flux, but when the mass of iron is liquid, iron ore is added in large or small amounts as may be required, the oxygen of the ore combining

with the carbon in the metal until the required composition of steel is obtained. Silicon and manganese in the pig iron are also oxidized, forming a slag with the oxide of iron supplied by the reduction of the ore and also by the oxidation of some of the iron in the charge. Neither phosphorus nor sulphur are eliminated, hence if steel of bessemer quality is desired, the stock is selected containing only small amounts of these elements, phosphorus under 0.1 per cent. and sulphur below 0.05 per cent.

For recarburizing, a rich ferromanganese is used: this is usually thrown into the ladle as the heat is being tapped from the furnace.

Basic Open Hearth Steel

In the basic open hearth furnace, the hearth is lined with basic material such as burnt dolomite or magnesite so that a very basic slag may be carried without injury to the lining. The charge consists of pig iron and scrap to which is added a certain



The Wellman open hearth charging machine.

amount of lime or limestone; iron ore is also used for oxidizing purposes, and a little fluor spar is added occasionally to effect a proper fluidity of slag.

The practice of charging varies, but generally the limestone is first put in, then followed by the ore, scrap and pig iron, the whole charge being melted down with later additions of ore and limestone as may be required. The silicon, manganese, and some of the iron, are oxidized just as in the acid process, but instead of making a slag by themselves, the silicon and oxides of iron and manganese unite with the lime that has been added, forming a basic slag, which will hold the phosphorus as it is oxidized. Sulphur is eliminated in the same way, but in a very much less degree. After the metal has reached the desired composition, it is tapped into the ladle with the addition of ferromanganese, as in the acid process.

The modern method of charging cold stock in the open hearth furnace, is by means of an automatic machine operated electrically on a railroad track extending along the front or charging sides of a battery of furnaces. The best known and most widely used type of charging machine on this continent is the Wellman. Essentially, this machine consists of a long charging bar equipped with a foot at one end which is caught in a socket on the charging box, lifting the box and thrusting it through the open doors of the furnace. The bar is then rotated and the contents of the box emptied on the hearth. The empty box is then withdrawn, and another is lifted and charged in like manner, the operation being continued until the whole of the stock has been charged

Charging and Mixing

If hot metal is used it is conveyed from the blast furnace to the mixer, and then taken as required to the open hearth department in large hot metal ladles. An opening is provided in the back of the furnace with an exterior lip basin for receiving the molten iron from the charging ladle as it is slowly poured into the hearth.

The time required for one heat varies greatly, and depends upon the different conditions of stock used, furnace operation and fuel supply. Generally speaking, ten hours would be considered good work for a furnace of 50 tons capacity, and 20 hours would be considered poor work

After the steel is tapped, the ladle is picked up by an overhead crane and the metal is teemed into a row of ingot moulds. When the metal has solidified the moulds are removed to the stripper, where the ingots are stripped and sent to the soaking pits and afterwards to the rolling mill.

Algoma Steel Company, Sault Ste. Marie. General view of works.

The Algoma Steel Company, Limited

This company, owned and operated by The Lake Superior Corporation, has the largest of the existing iron and steel works in Ontario, both as regards tonnage produced and amount of capital invested.

The plant is located at Sault Ste. Marie on the St. Mary's river, a short distance above the rapids and consists of two blast furnaces with all necessary modern stock handling machinery, two acid bessemer converters, two basic open hearth furnaces and a rail mill with a capacity of 225,000 tons annually.

Work on construction was begun in 1901, the bessemer and rail mill departments being erected first, and operated entirely on pig iron brought in by boat and rail from Ontario and American blast furnaces, until the company's No. 1 blast furnace was completed in 1905 and No. 2 in 1906. At the present time the steel making departments require more iron than the blast furnaces can supply, necessitating the buying of considerable amounts of pig in the open market. The company intend to correct this inadequacy by building two additional blast furnaces in the near future. The open hearth department was constructed in 1906-1907, and has proved a valuable auxiliary to the bessemer department.

The ores used are obtained almost entirely from the Lake Superior American ranges. A small amount only of Helen ore is smelted, as it contains too much phosphorus for the bessemer process. Several small shipments have been received from the Wilbur mine in eastern Ontario, this being the only native bessemer ore used at present.

It was originally intended to manufacture charcoal for the blast furnaces, and No. 1 furnace for a time operated on this fuel, but it was found very difficult to supply the necessary amount, and coke had to be substituted. Accordingly Pocahontas coke from the West Virgina fields is brought in by rail, and this imported coke will be used until the company instal a coke oven plant, which is under consideration. Limestone is quarried in Michigan about 40 miles from the Sault and is brought in by rail. This stone serves for both blast furnace and open hearth use.

The following approximate analyses will give some idea of the quality of the ore, coke and limestone:

Material.	Fe	Al_2O_3	SiO_2	Phos.	Mn	CaO	MgO	S	$CaCO_3$ $MgCO_3$	Fixed Carbon	Ash	Vol.
Ore	55-60	2.00	7.00	0.035	0.1	0.50	0.97	0.03				
Coke										89.4	8.07	2.3
Stone									96-98			

The Blast Furnaces

The ore docks lie behind the blast furnaces. They are 1,600 feet long with 20 feet of water alongside and are equipped with two Wellman-Seaver-Morgan unloading bridges. These bridges have a span of 293 feet, and are 84 feet high at the inner end and 50 feet high at the water end. The power for moving the bridges and operating the grab buckets is supplied by a pair of 130-h.p. electric motors installed in cabins which are built on the short legs of each bridge, all operations being controlled from these points. The capacity of each bridge for unloading and re-handling from the stock piles to the furnace bins is approximately 1,000 tons for 24 hours. The storage capacity of the ore yard is about one half million tons.

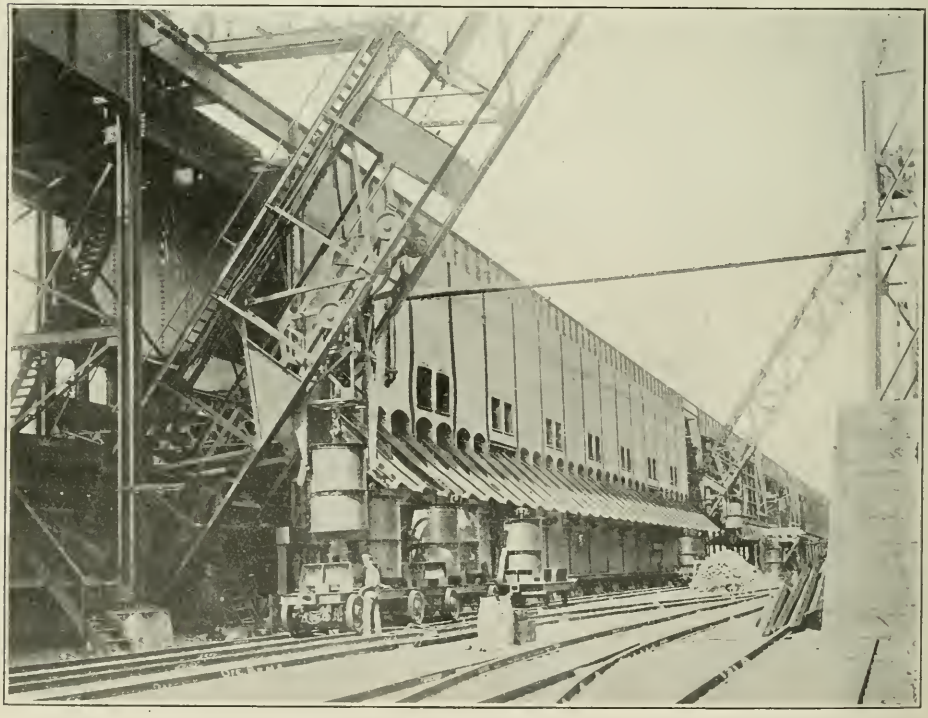
The blast furnace storage bins are of the Berquist type, 32 in number, 16 for each furnace. They are 40 feet high, substantially built of brick and steel. Eight pockets are used for ore, holding when full 3,000 tons, the remainder being used for coke and limestone. The ore is conveyed by the bridge clam-shell buckets and is dumped into the pockets through movable chutes that run on a steel trestle above the line of the pockets. Or if the pockets are full the ore as it is unloaded from the boats is dumped on the stock piles, to be picked up again as required. Coke and limestone cars are shunted on to the bin trestle, which connects with The Algoma Central and Canadian Pacific railways, the contents being dumped direct into their respective pockets. The system is provided with chutes on the blast furnace side, through which the stock is discharged into the furnace skip buckets. The buckets are detached from the skip hoist and placed on electrically operated transfer scale cars running alongside the pocket chutes, which are provided with independent gates.

Each furnace is equipped with a bucket skip hoist operated by a 135-h.p. motor controlled from the ground floor. No distributor is used on top, the stock being dumped direct on a single bell through the drop bottoms of the buckets. A topman is employed on each furnace for operating the buckets and charging bell, also to gauge the height of the stock in the furnace.

The two blast furnaces are on a line parallel with the bin system. They are of the following dimensions:

No. 1.		No. 2.
70 feet	Height	80 feet.
17 feet	Bosh	17 feet.
11 feet	Hearth	11 feet.
10 feet 5 inches	Throat	10 feet 5 inches

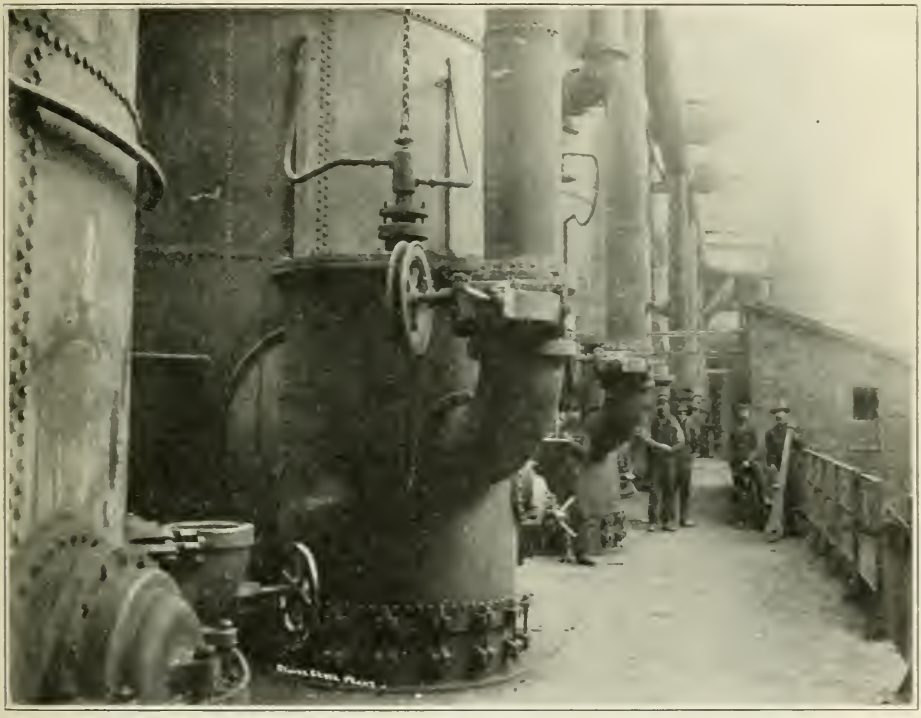
Algoma Steel Company, Sault Ste Marie, Ont. Ore bridges at the docks, blast furnaces in background.



Algoma Steel Company. Bottom of skip hoists for Nos. 1 and 2 blast furnaces, showing bin system and method of filling buckets.

Both furnaces are of the ordinary modern construction—a steel shell carried on cast iron columns. The hearths of both furnaces are encased in steel jackets, water cooled both inside and out. The bosh on No. 1 is covered with a steel casing cooled by water spray on the outside, that of No. 2 furnace is fitted with modern bronze water cooling blocks, and both furnaces are cooled for 9 feet above the bosh in a similar manner. Each furnace is blown through nine 5-inch tuyeres, with an approximate volume of 20,000 cubic feet of air per minute, the blast pressure at the tuyeres being from 9 to 12 pounds per square inch.

Between the furnaces and in line with them are 7 hot blast stoves, each of which is 18 feet in diameter and 70 feet high. These stoves are of the two-pass Foot type, and will heat the blast to 1,400 degrees F. The hot blast and chimney valves are



Algoma Steel Company. Base of hot blast stoves, showing chimney valves.

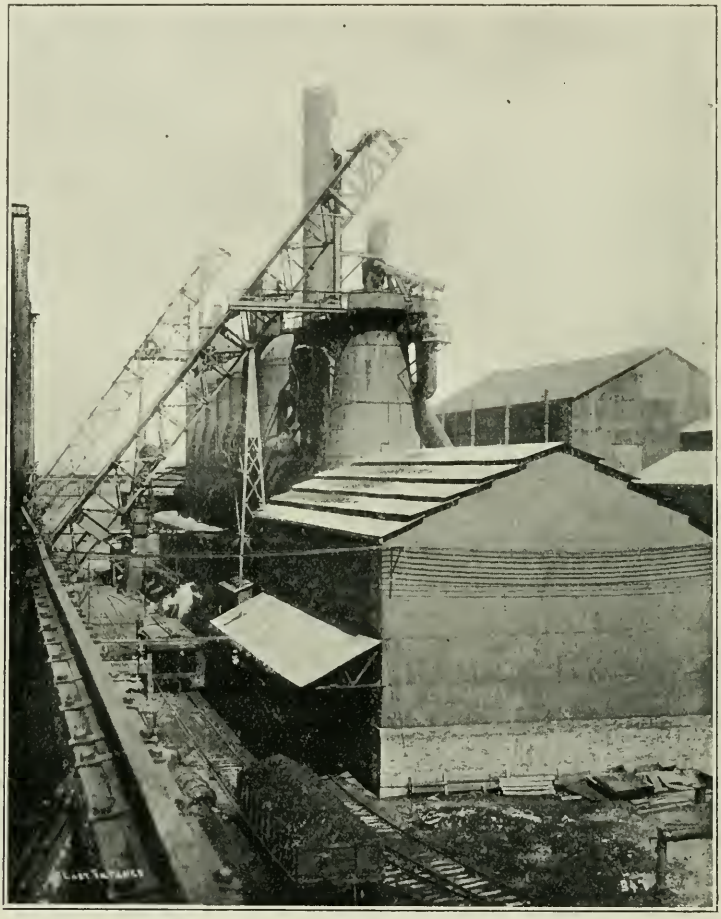
water cooled. A steel draft stack 150 feet high situated midway between the blast furnaces takes the chimney gases after their passage through the stoves. The stove system for each furnace is equipped with Uehling pneumatic pyrometers for air and gas; Bristol recording gauges are used for indicating the blast pressure.

The furnaces are provided with divided leg downcomers which enter large cylindrical dust catchers of the ordinary type. The dust mains from the dust catchers to the stoves and boilers are equipped with dust legs, at short intervals, so that the amount of dust which reaches the stoves and boilers is not excessive.

In front of each furnace are built the cast houses of steel and corrugated iron: sand casting is not practised at all. The hot metal is run into 20-ton ladles and taken to the mixer in the bessemer department. After casting, the tapping hole is

closed with an ordinary Vaughan notch gun. On Sundays or at any time when the bessemer department is not operating, the molten iron is conveyed to the pig casting machine. The furnace slag is also handled in ladles, and is carried to the cinder banks where it is used for filling and extending the general yard.

Both furnaces are operated for bessemer iron; the output from each furnace for six consecutive months is shown in the following table, and considering that the



Algoma Steel Company. Blast furnaces Nos. 1 and 2, showing bucket skip hoist.

coke consumption averages 2,300 pounds per long ton of iron, the results are indicative of good furnace practice.

The average tonnage of pig iron made per day, is shown by the following figures:[32]

1907.	No. 1 Furnace.	No. 2 Furnace.
July	128	249
August	Relining	224
September	204	236
October	221	258
November	240	258
December	245	212

[32] Iron and Steel Industry of the Province of Ontario, by Jas. G. Parmelee; Journal of the Canadian Mining Institute, Vol. XI.

The ore mixture consists of about 75 per cent. of Old Range and Mesabi bessemers, the remainder being Ontario ores, principally Helen and Wilbur. The yield of pig iron from this mixture will vary between 48 and 53 per cent. The charge is made up as follows:

Coke	5,400 pounds
Ore	10,000 pounds
Limestone	3,000 pounds

The blast furnace blowing engines are situated in a building alongside the furnaces. These are four vertical condensing engines of the Steeple Corliss type,

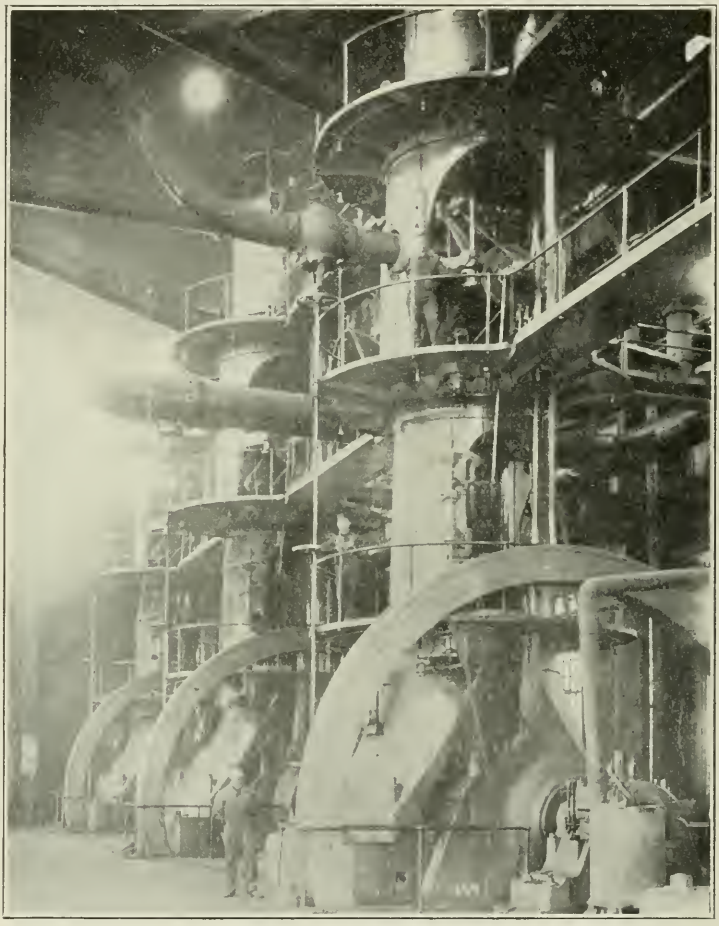
Algoma Steel Company. Top of No. 2 Blast Furnace, showing method of filling the furnace.

built by the Mesta Machine Company of Pittsburg, the steam cylinders being 44 inches in diameter, and air cylinders 72 inches diameter, with a 60-inch stroke. The air inlet valves of the blowing tubs are operated positively; the discharge valves are of the ordinary poppet type. At 40 revolutions the four engines will deliver 45,000 cubic feet of air per minute, and are capable of blowing against a pressure of 30 pounds.

The pumping plant for supplying the blast furnaces, also located in the engine room, consists of 3 Wilson-Snyder compound condensing plunger pumps, having a total capacity of 15 million gallons per day. The electrical equipment consists of

3 General Electric, 225 kilowatt generators, two of which are geared to the driving shaft of one of the blowing engines, and the third operated independently by a small auxiliary engine. The two generators driven from the blowing engine are only used in case of emergency, when trouble is experienced at the main generating plant of The Lake Superior Power Company. The engine room is equipped with a 15-ton electric crane built by The Whiting Foundry and Machine Company.

Steam is supplied to the engine room at 125 pounds pressure from an adjacent boiler house containing a battery of 12 Cahall vertical water tube boilers, with a



Algoma Steel Company. Blast furnace blowing engines.

combined capacity of 3,000 h.p. The boilers are arranged in sets of two, three, three and four respectively, and each boiler is equipped with a 40-foot stack, 36 inches in diameter. Blast furnace gas is burnt, with the Kennedy horizontal valve, coal being used for auxiliary firing.

The Heyle and Patterson three stand pig casting machine is installed in a steel building about 800 feet distant from the blast furnaces. This building also serves as a ladle repair shop. The casting machine is fed directly from the 20-ton iron ladles, which are picked up and tilted by a 40-ton overhead electric crane, the metal flowing through small runners to each stand of the casting machine. The machine is

driven by a 30-h.p. electric motor at the delivery end. The chilled pigs fall on flat cars, which are shunted to the iron stock piles near the Bessemer building. Here the pigs are unloaded by a crane derrick, equipped with an electro-magnet that will easily lift one ton. By this means the iron is transferred to the stock piles with ease and rapidity.

The Steel Plant

The basic open hearth department consists of a large steel and corrugated iron building containing two 40-ton Wellman-Seaver-Morgan stationary furnaces, the foundations for a third furnace being in place. This department is located so that additional units may be added as required. The stock enters the building by an elevated incline standard gauge road, and is charged to the furnaces by a Wellman-Seaver-Morgan electric charging machine of the well known box type. On the cast-

Algoma Steel Company. Basic open hearth building on the right; bessemer plant and rail mill on the left.

ing side the ladles are handled by a 60-ton overhead electric crane made by the Morgan Engineering Company. The steel is teemed into ingot moulds, which are then hauled to the electric stripper in the bessemer department. The ladles are repaired in the open hearth building and dried out afterwards with producer gas.

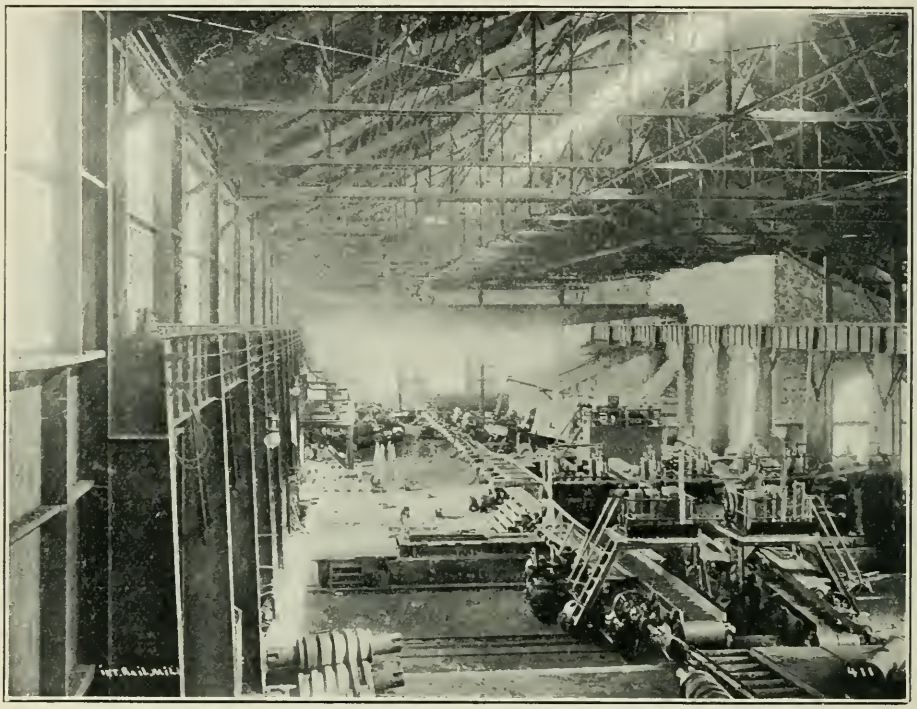
The eight gas producers situated immediately behind the open hearth building are of the ordinary water-sealed hand-poked type, 10 feet 6 inches in diameter. Coal is handled by a McMyler hoist outside the producer house, delivering to chutes which convey the fuel to the charging platforms.

The open hearth department has been operated only in May and June of 1907: the number of heats at that time averaged 28 per week. Pig iron for this process is bought outside, no basic iron being made at present by the Sault furnaces.

The bessemer department, steel rail and finishing mills, are installed in a series of red sandstone buildings with iron roofs, extending practically in a straight line adjoining one another.

The mixer building, constructed of steel and corrugated iron, is built against the bessemer building on the side next the blast furnaces. The mixer holds 150 tons of hot metal, a 40-ton electric travelling crane handling the iron ladles as they arrive from the blast furnaces on a standard gauge railroad.

Between the mixer and the bessemer converters there are seven cupolas—four of these, 8 feet in diameter, are used for melting pig iron for the converters, but are operated only when there is an insufficiency of hot metal from the blast furnaces. These iron cupolas have a capacity of 25 tons per hour. The other three, 5 feet 6 inches in diameter, are used for melting down spiegeleisen. Stock is hoisted to the cupola charging platforms by a pair of Otis electric elevators. The hot metal from the cupolas is cast into ladles on a level with the charging floor of the converters, and is either taken to the mixer, or if needed may go direct to the converters by an



Algoma Steel Company. Interior of rail mill, cooling beds in the distance.

electric trolley narrow guage system operating between the mixer, cupolas and converters.

The two 4-ton acid bessemer converters are mounted on a platform which is on a level with the bottom floor of the cupola house. Each converter is blown through bottom tuyeres by a pair of blowing engines, situated in a separate building, which supply the blast at a pressure of about 18 pounds. These engines have 40-inch steam and 54-inch air cylinders with a 48-inch stroke. From 80 to 200 heats are blown per day, the average time consumed for one heat being about 8 minutes.

The finished steel from the converters is poured into a ladle mounted on a hydraulic jib crane, and then teemed into the ingot moulds standing on small flat cars alongside. The moulds after being filled are taken to a Wellman-Seaver-Morgan standard electric stripper, and when stripped the ingots are placed in the soaking

pits. There are three four-hole gas-fired soaking pits, each hole having a capacity of 4 ingots. After remaining in the soaking pits until the centre of the ingot is solid and the heat evenly distributed throughout, the ingots are withdrawn by a pair of ingot tongs operated from an overhead electric crane, and conveyed to the blooming mill table. The cogging rolls are 32-inch, two high, and are driven by a pair of 28 x 48-inch Southwark reversing engines. The tables are driven electrically, and from a pulpit above the mill the engines, tables and manipulators are controlled. The blooms 8 x 8 inches are carried along the tables to the bloom shears and cut into sections of about 3,000 pounds each; these shears will make a maximum cut of 9 x 9 inches.

From the shears the blooms go to three horizontal re-heating furnaces fired with producer gas, contained in a building placed at right angles to the rail and blooming mills. The blooms are handled by two Wellman-Seaver-Morgan electric cranes, and after being heated are withdrawn by the cranes and placed on the tables of the rolling mill.

The building which contains the rail mill adjoins the heating furnaces and is parallel with the blooming mill building. The rail mill train consists of three sets of rolls,—two roughing and one for finishing. All the mills are three high and coupled together, being driven by a 40 x 48-inch Porter Allen, reversing condensing engine. Each section receives four passes in the first set of roughing rolls, four in the second and three final passes in the finishing set. The travelling tables serving the rolls on the front side are electrically operated. On the back side the tables are of the stationary tilting type, furnished by the Wellman-Seaver-Morgan Company.

From the finishing mill the rails are conveyed to the hot saws and cut to standard lengths. They are then stamped and cambered, and run on to the cooling beds of which there are two, each 140 feet long, running at right angles between the rail mill and the finishing department. The finishing mill runs parallel again to the rolling mills, and contains four straightening presses and eight drill presses, each press being driven electrically by an independent motor. The rails are conveyed by a roller table to any desired position along one side of the building and then skidded to the presses, the burrs being chipped off during the process of straightening and drilling. They are then loaded direct on flat cars to be shipped or stored as occasion requires.

The power for the steel mill is located in a building near by, and consists of two batteries of 8 Sterling boilers of 250-h.p. each, three gas producers of the Fraser-Talbot mechanical type, for supplying the soaking pits and re-heating furnaces, the bessemer blowing engines, cupola blowers and the necessary pumping machinery; the boilers, gas producers, engines and pumps being partitioned off from each other.

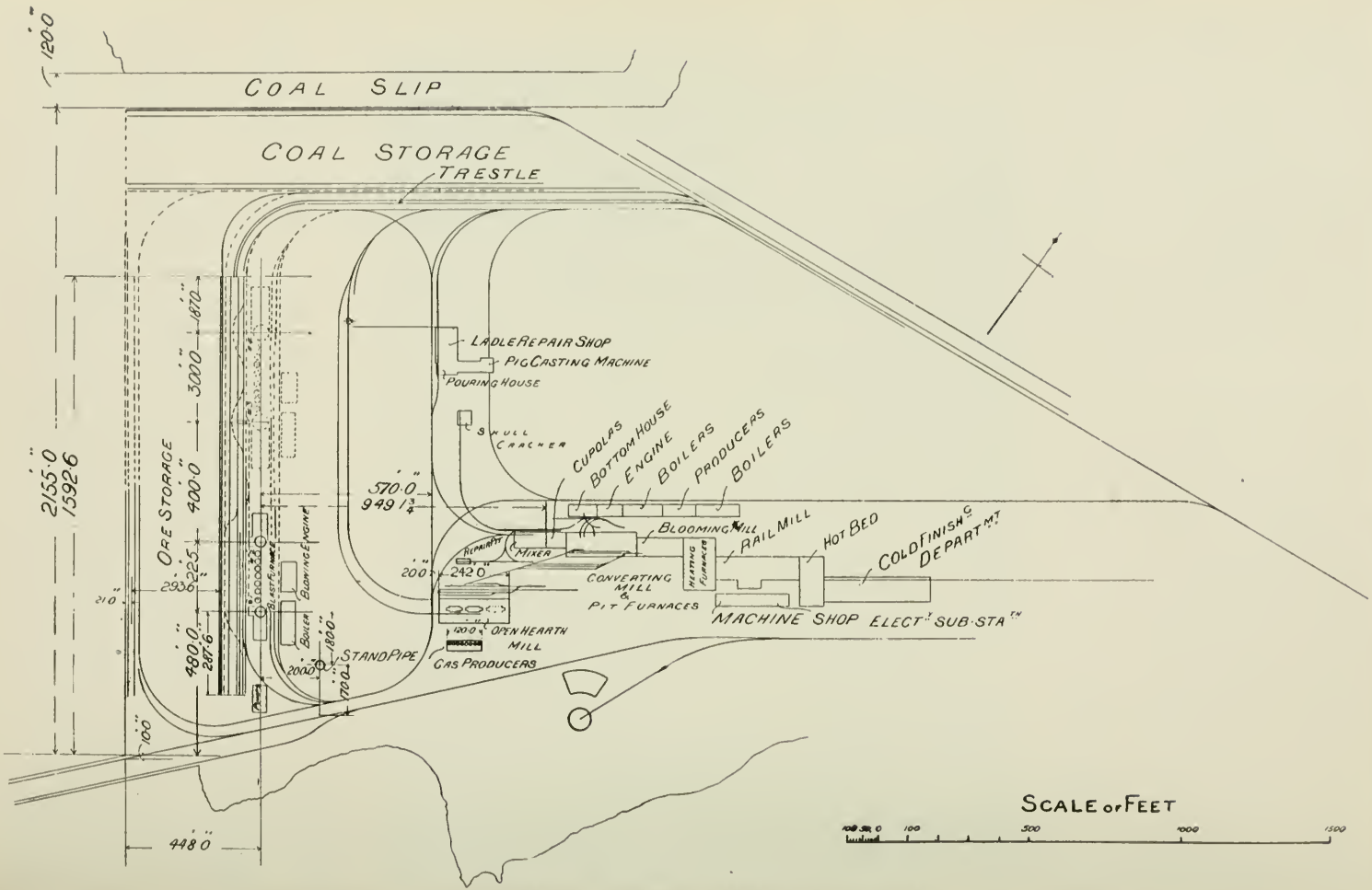
The capacity of the plant is rated at 225,000 tons of rails annually. The whole works are under the general superintendence of Mr. D. D. Lewis, to whom thanks are due for all information.

The rail mill can turn out rails of any desired section from 25 to 100 pounds per yard, but as the demand has been mostly for 60-, 75-, 80- and 100-pound rails, rolling has been confined to these sections.

The Hamilton Steel and Iron Company, Limited

The works of the Hamilton Steel and Iron Company, Limited, are located in Hamilton, on the shore of Burlington Bay, Lake Ontario, and in point of size and investment come next to those of The Algoma Steel Company.

The plant consists at present of two coke blast furnaces, four basic open hearth furnaces, puddling furnaces, rolling mills and a forging department, also a small spike mill.



Algoma Steel Company. General plan of works.

The old blast furnace, known as A., was first blown in on December 31st, 1895, and was the first coke blast furnace to operate in Ontario. The plant was worked for a time under the name of The Hamilton Blast Furnace Company, Limited, with more or less success, until in 1899 the company amalgamated with The Ontario Rolling Mills, another Hamilton industry; the new organization called The Hamilton Steel and Iron Company, Limited, operating both plants from that time forward under careful and efficient management. Various additions have been made during the last few years, increasing the capacity of the plant considerably; the latest and most important adjunct being the new blast furnace known as B., which was blown in on November 8th, 1907.

All raw materials are brought in by rail, the ores coming from Lake Superior are transferred to drop bottom steel cars at Sarnia on Lake Huron, where the company operate their own unloading plant, and arriving at the furnace are dumped from a series of trestles to the storage yard below, or may be unloaded from gondola cars by McMyler "whirlie" cranes equipped with grab buckets. These cranes also serve to lift the ore from the storage piles and deliver it to drop bottom cars which are transferred over and discharged into the furnace stock bins. Some years ago small amounts of eastern Ontario magnetites were used, but the high sulphur content did not permit of their forming any important percentage of the ore mixture, and their use was discontinued. Latterly, all ores have been secured from the Lake Superior American ranges and from the Helen mine in Michipicoten. Coke is obtained from the Pennsylvania Connellsville district, arriving by way of Niagara Falls, and is dumped direct into the furnace bins or may be stored as required by circumstances. Limestone is obtained from several localities not far from Hamilton. Dolomite from the Dundas quarries is used for the blast furnaces, and from the St. Mary's quarries in Perth and Port Colborne quarries in Welland are obtained the limestones for open hearth work.

The following approximate analyses indicate the quality of the raw material:

Material	Fe	SiO_2	Al_2O_3	P	Mn	Ca O	Mg O	S	$\frac{Al_2O_3}{Fe_2O_3}$	Ash
Ore	55.00	7.00	2.00	0.25	0.5	0.20	0.10	0.01	.....	.....
Coke	.....	5.-6.	.....	0.06	.....	0.50	0.30	1.25	5.-6.	10.-12.
Dolomite for blast furnaces	.....	1.54	.....	.....	.....	30.31	18.70	.....	1.22	.....
Limestone for open hearth furnaces	.....	0.61	.....	.....	.....	52.75	1.09	.....	1.55	.....

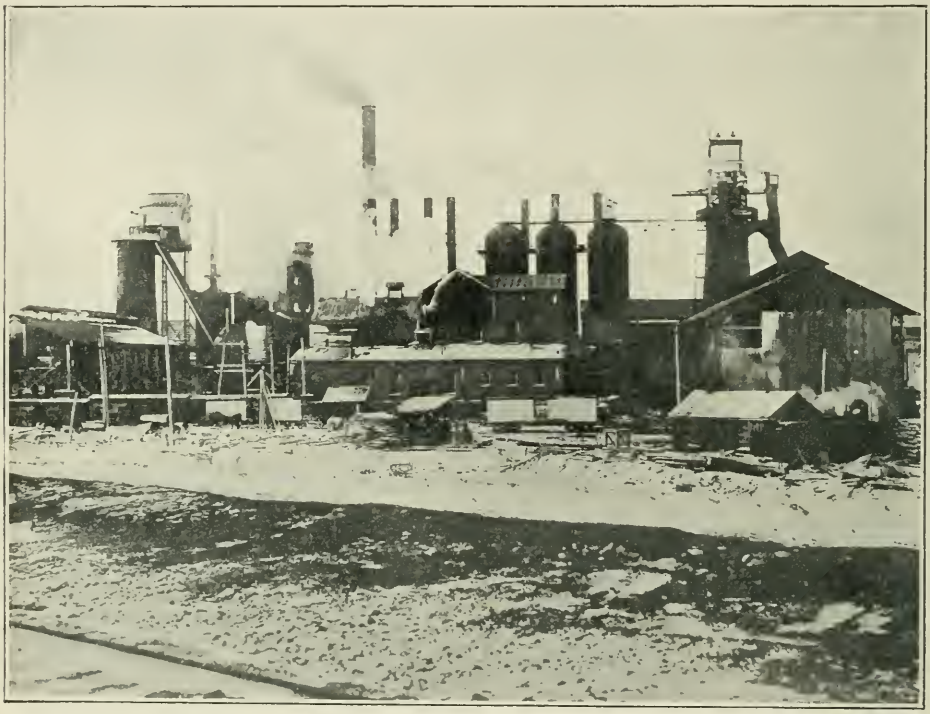
Furnace A

The old original blast furnace, at present blown out, is 75 feet 6 inches high with a bosh diameter of 16 feet, a hearth diameter of 10 feet 3 inches, and 13 feet in diameter at the throat. The hearth is encased in a one-inch steel jacket cooled by water spray on the outside, the boshes being cooled by a series of bronze water blocks. The hearth is pierced for 10 tuyeres, and when in operation the furnace was blown through 5-inch tuyeres with an approximate blast volume of 20,000 cubic feet of air per minute. The furnace is at present equipped with a vertical double cage hoist, all stock being hand filled to a single bell, operated by steam. The charge consisted of about 1.5 lb. of ore per pound of coke for foundry iron, and 1.85 lb. of ore per pound of coke for basic iron, the coke charge weighing 7,000 pounds. The cast house in front of the furnace is a large brick building with ample capacity for sand casting, although the general practice was to convey the hot metal in 22-ton ladles direct to the steel department. The slag was also handled hot, being conveyed to the dump in ladles and used for filling purposes. The stove plant for this furnace consists of three Gordon chimney top, three pass stoves, and one 70 feet x 20 feet Cowper-Roberts stove. The furnace produced on an average 200 tons of iron per day, and when re-

constructed on plans already completed, will, it is expected, increase this amount by 50 tons in 24 hours. The alterations will consist of raising the hearth about two feet, thus shortening the bosh a similar amount, the bosh diameter remaining the same. The throat diameter will be narrowed to 11 feet 6 inches, giving the stack considerably more release per running foot, which will admit of more rapid driving, and the old vertical hoist will be replaced by a double skipway, provided with all necessary charging gear.

Furnace B

The new furnace B. is built on a line with the old stack and has a height of 80 feet over all, the bosh diameter being 20 feet and the hearth diameter 13 feet 6 inches, with 14 feet diameter at the throat. The steel shell, of which the bottom



Hamilton Steel and Iron Company blast furnace plant. Old No. 1 furnace on the left; New No. 2 furnace on the right.

and top plates are ½-inch with the intervening plates ⅜-inch thick, is carried on 8 massive cast iron columns. The bosh is provided with 7 rows of bronze water cooling plates of the Scott type, a single row of these plates being fitted in the hearth brick below the tuyeres. The hearth is jacketted with wrought steel one inch thick, cooled by water spray on the outside, and is pierced for 12 tuyeres. The volume of blast used at present is about 27,000 cubic feet per minute, blown through 5½-inch tuyeres at a pressure of 12 pounds. Under hard driving this volume may be increased to 35,000 cubic feet per minute, with an increase in pressure of 2 to 3 pounds per square inch. For foundry iron the furnace is burdened with about 1.75 lb. of ore per pound of fuel, on a coke charge of 10,000 pounds, the yield of pig metal from the ore mixture averaging 52 per cent.

The furnace is provided with a double skip hoist charging apparatus and distributor of the Roberts revolving type; the distributor, operated electrically, is turned

through angles of 90 degrees for successive skip loads. The large and small bells, of 10 and 4 feet diameter respectively, are provided with a heavy bridge for charging purposes, both bells being operated by steam, The skips are operated by a Crane steam engine. The starting lever for this engine, the control of the bell cylinders, the indicators, distributor, and automatic try rod apparatus are all located at the foot of the skip hoist, and operated by one man.

The bin system behind the furnace consists of two rows each containing six pockets, with a railroad track over each row. The row next to the furnace is used

Hamilton Steel and Iron Company. No. 2 blast furnace during construction, showing Roberts dust catcher.

for limestone and special ores, the two pockets adjacent to the skips being used for coke. The row of pockets on the back side of the stock house is reserved for the main supply of ore. The coke pockets discharge directly into the skip cars by means of chutes provided with screens for getting rid of the "breeze" (fine coke). The ore and limestone are conveyed from the pockets to the skip car by an electric transfer scale car. The gates on all the ore and stone pockets are of pivotted type, and are opened by a lever carried by the transfer car.

The furnace downcomer is connected to the stack at one point, both the furnace and the downcomer being provided with suitable bleeders and explosion doors. At the foot of the downcomer is located the dust catcher, connecting to a Roberts cen-

trifugal dust collector,[33] with a by-pass around the dust collector to the gas mains which lead to the hot blast stoves and boilers. The gas mains are equipped with seven dust legs closed by counter-weighted bells. The whole system for cleaning the gas is giving efficient service, very little dust finding its way to the stoves or boilers.

The three hot blast stoves are of the Roberts-Cowper type 21 feet in diameter and 90 feet high. These stoves are capable of heating the blast to 1,600 degrees F., although ordinarily the temperature is not over 1,200 degrees. Both hot blast and chimney valves are water cooled, the chimney gases escaping to a steel stack 160 feet high and 8 feet in diameter, provided for the stove system of both furnaces. The pyrometers for indicating the temperatures of the blast and the pressure gauges for blast pressure are of the Bristol electric recording type, and are situated in the office of the furnace superintendent.

The cast house consisting of a steel frame covered with corrugated iron is 55 feet wide by 235 feet long and is provided with sliding doors on the sides. The iron is cast in sand pig beds or may be taken in hot metal ladles to the steel department, depending on whether the furnace is on foundry or basic iron. An overhead electric crane of 10 tons capacity runs the full length of the cast house, and conveys the pig combs (beds) to a Brown hydraulic pig breaker placed at the lower end of the house. The iron as it is broken drops into chutes that deliver to railroad cars for shipment.

The new furnace was designed and constructed under the supervision of The Frank C. Roberts Engineering Company of Philadelphia, the furnace lines being supplied by Charles A. Grimes, superintendent of blast furnaces for the Hamilton Steel and Iron Company, Limited. The furnace was expected to produce 300 tons per diem, and since it has been in blast has turned out an average of 325 tons of 2.5 per cent. silicon iron per 24 hours, on a fuel consumption of about 2,600 pounds per long ton of iron. This practice speaks for itself, and is commendable alike of the builders and of the operating management.

Approximate analyses of iron produced from furnace B. are as follows:—

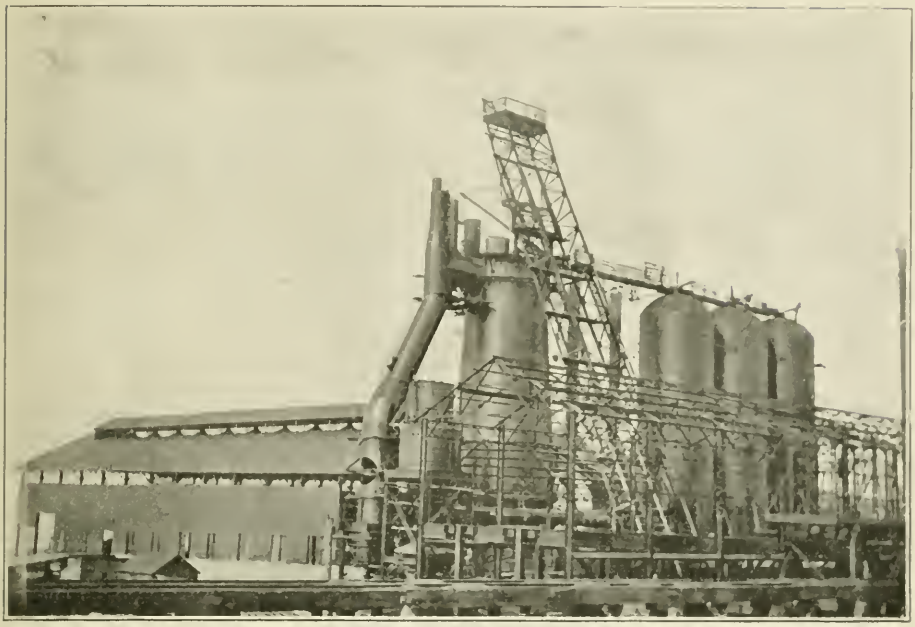
Grade	Si.	S.	P.	Mn.	G. C.	C. C.
Foundry Iron	2.50	0.020	0.50–0.60	0.4–0.6	3.0–3.25	0.5
Basic Iron	1.25	0.050	1.0–2.0	1.0–1.5	.....	.....
Malleable Bessemer	1.25	0.025	0.15–0.2	0.6	.....	.....

The power plant is common to both furnaces and consists of 10 Sterling and two Babcock and Wilcox boilers, combined capacity 3,600-h.p. All boilers are arranged for both gas and coal firing, and are provided with independent stacks. The engine house contains 5 blowing engines, two Gordon engines, 42-inch steam, 84-inch air, and 60-inch stroke, one Laurie engine, 42-inch steam, 84-inch air, and 60-inch stroke, and two Todd engines arranged to work cross compound, the high and low pressure steam cylinders being respectively 42 inches and 82 inches, and the air cylinders 84 inches in diameter with a 60-inch stroke. The installation of a sixth engine is contemplated for the near future. The pumping equipment consists of three electrical turbine pumps and one direct acting plunger pump, having a total capacity of 12,000,000 gallons in 24 hours. The electrical generators are three machines with an ample capacity to meet all ordinary requirements.

The Steel Department

The basic open hearth department is contained in a steel and corrugated iron building 400 feet long by 90 feet wide, situated about 300 yards from the blast furnaces. This building also contains a newly installed hot metal mixer of 150 tons capacity, heated by natural gas and geared to a 25-h.p. electric motor for tilting pur-

[33] See Iron Age, May 9, 1907, for description of this dust collector.

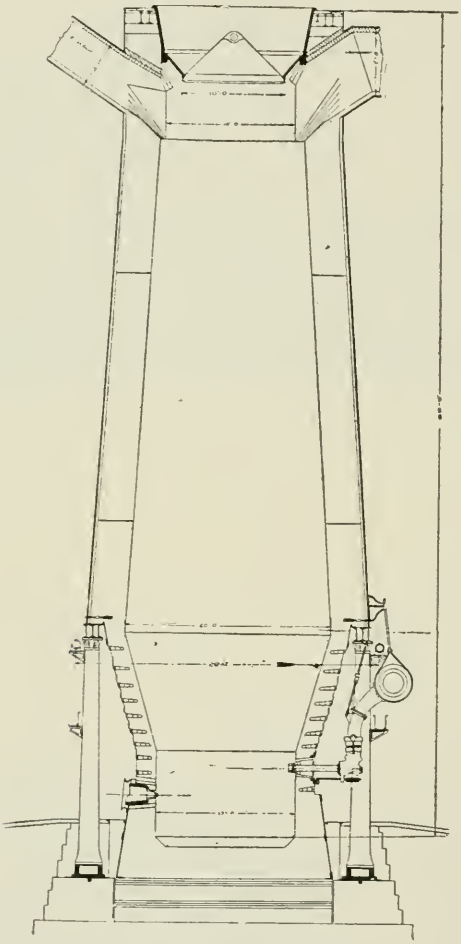


Hamilton Steel and Iron Company. No. 2 Blast furnace during construction.

Hamilton Steel and Iron Company. No. 2 blast furnace during construction.
20 M.

poses. A small steel foundry is included in the equipment, manufacturing steel castings and forging blooms. About 100 tons of various kinds of castings are produced monthly.

Two of the open hearth furnaces are of 40 tons and two of 20 tons capacity; all are of the stationary type and are fired with natural gas piped from the Attercliffe fields in Haldimand county. The gas needing no regeneration enters the furnace through two 2½-inch water-cooled ports at each end of the hearth, at a pressure of 8 ounces per square inch. Two ports at the same end are opened together. The gas



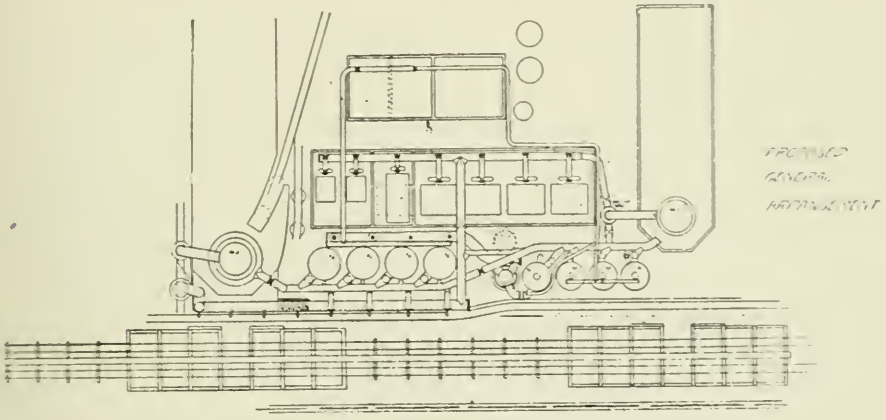
Hamilton Steel and Iron Company. Lines of No. 2 blast furnace.

mixed with air that passes up through the regenerators below, sweeps through the furnace, the products of combustion passing through the regenerators at the opposite end. Every 15 minutes the direction of the flow of gas and air is changed by closing the gas and air supply at the cold end and opening the ports at the hot end, the products of combustion passing through the first set of regenerating chambers. In this way the whole regenerating system is used for heating the air, the efficiency of the furnace being increased considerably thereby. Natural gas is easier of control, less hurtful on the furnace and is cheaper than producer gas. The volume of gas con-

sumed in these furnaces per ton of product is about 6,000 feet. A battery of nine 10 x 10-foot water sealed gas producers is installed behind the open hearth department, but is only used as an auxiliary in case the supply of natural gas should prove inadequate.

The stock enters the building by an elevated road on the charging side of the furnaces, being served by a Wellman electric charger of the ordinary type. A normal furnace charge consists of 51 per cent. of hot metal from the mixer with 49 per cent. of scrap, the limestone added being about 10 per cent. of the weight of the metal charged. Ore is charged only in special cases. An average of three heats per furnace is worked in 24 hours. On the casting side the department is equipped with four overhead travelling cranes—one 75-ton Shaw crane with a 10-ton auxiliary carriage, one 40-ton Niles crane, one 20-ton Shaw crane and one 5-ton Whiting crane. The ladle equipment consists of two 50-ton and two 30-ton steel ladles, also four 22-ton hot metal ladles.

The steel is cast in 6-inch ingots weighing about 400 pounds each; these small ingots are necessitated by the fact that there is no blooming mill in the rolling mill department. Casting is accomplished by the bottom plate method, the ingot moulds



Hamilton Steel and Iron Company; proposed general arrangement of blast furnace plant.

standing in groups of 65 on a cast iron circular plate provided with channels well luted with fire clay. The steel is teemed into a central "git" and flowing through the channels in the bottom plate, rises in the ingot moulds filling them simultaneously. About 130 ingots are filled at one cast.

The scrap shears for the cutting up of this material, of which a considerable amount is re-melted, are placed outside of the open hearth building alongside the scrap piles. The largest shear will cut 6 × 6 inches cold; this machine installed lately was supplied by the United Engineering Company of Pittsburg and is driven by a 125-h.p. electric motor. The next size, supplied by the Bertram Engine Works of Dundas, will make a 4 x 4-inch cut and is operated by a 75-h.p. motor. The third and smallest shear making a 2 x 2-inch cut is used for light plate and other small material.

The rolling mill is placed south of and parallel with the open hearth building. This department consists of a continuous heating furnace handling 80 to 90 tons in 12 hours. One 3-high 14-inch train is driven by a 600-h.p. reversing engine, and one 3-high 10-inch train is driven by an 800-h.p. motor. The mill produces about 2,500 tons monthly of merchant bars, flats, rounds, angles and squares. A small spike mill located near by contains two machines which turn out about 15 tons of track spikes daily.

The second rolling mill and the forging plant is located on Queen street, adjacent to the general offices of the company and near the station yards of the Grand Trunk railway. These works include one 2-high 20-inch bar and one 20-inch plate mill, one 3-high 10-inch train, and one 3-high 9-inch muck train, all driven by steam. The furnace equipment consists of four double puddling furnaces, four bushelling furnaces and several heating furnaces. The forge contains 4 steam hammers finishing lathes, etc.

The whole plant at present produces annually 180,000 gross tons of pig iron, 100,000 net tons of steel ingots, and 90,000 to 100,000 gross tons of rolled iron and steel besides forgings, railing car axles and track spikes.

Thanks are due to Mr. Robert Hobson, Vice-President and General Manager of the Company, for courtesies received, and to Mr. George L. Drew, general superintendent, to Mr. Charles A. Grimes, superintendent of blast furnaces, and to Mr. F. B. McKune, superintendent of the steel works, who kindly supplied all information, putting much of their time at the disposal of the writer.

The Canada Iron Furnace Company, Limited

This company has operated a small furnace in Midland, Simcoe county, on the Georgian Bay since 1900, the furnace being first blown in on November 28th of that year.

The plant is situated on the shore of Midland harbor facing the town, the works being erected in immediate proximity to the water. The substantial ore docks are 1,700 feet long with an average depth of water of 22 feet alongside and are equipped with three 60-foot boom, McMyler "whirlie" hoists, running on a railroad track that extends the full length of the docks. Two of these hoists are fitted with 5-ton clam-shell grabs, the third with ordinary hand filled buckets. The ore storage yard between the furnace and the water has a capacity of about 100,000 tons of ore. It is the intention to bridge the dock from end to end, placing the McMyler hoists on the trestle, which will greatly facilititate the unloading of the ore boats and will about double the capacity of the storage yard.

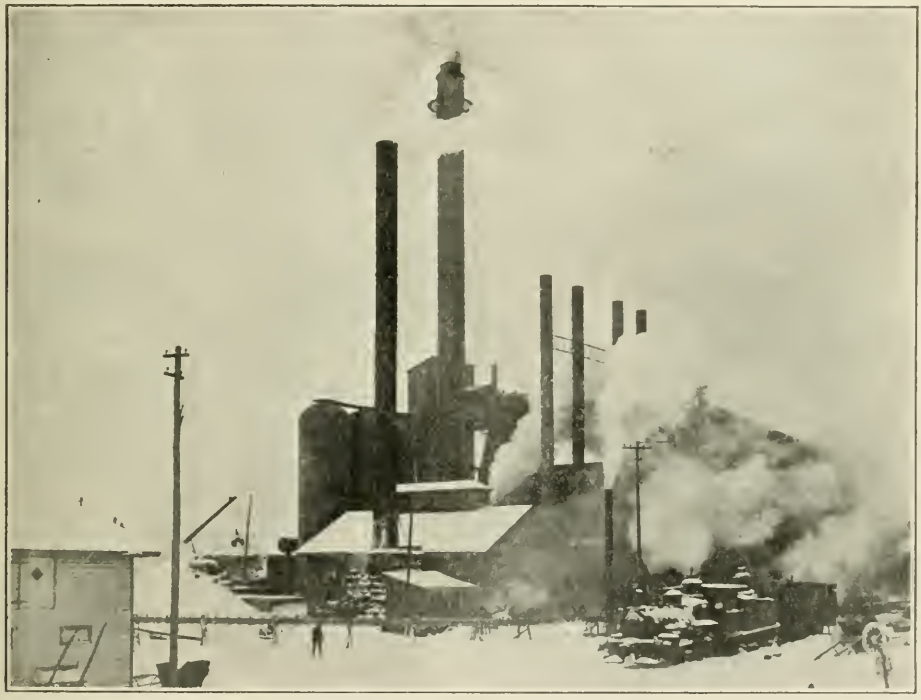
A stock shed behind the furnace contains two 5-beam Howe scales for weighing the coke, ore and limestone, and affords shelter for the stock house gang "between rounds." The ore supply is obtained mainly from the Lake Superior district, the percentage of imported ores used varying between 50 and 75. Considerable amounts of native ore have been smelted from time to time, notably that produced from the Helen mine. Eastern Ontario magnetites have also received their share of attention, but as at other furnace plants, the ores have generally proved too high in sulphur. However, within the past two years a considerable amount of magnetite from The Mineral Range Iron Mining Company in Hastings county has been received by rail and successfully worked, and no doubt this ore, if holding its present quality, will be used in increasing amounts in the future. Coke is brought in entirely by rail from the Connellsville district in Penslyvania,, and is stored in large open piles, or may be used direct as required. The limestone is obtained from the company's quarries on the eastern shore of Midland bay, about five miles from the furnace and is conveyed on scows towed by steam tug to the plant where it is unloaded by the McMyler cranes. Several shipments of limestone have also been received from the Longford quarries north of Orillia.

Approximate analyses of the ore, coke and limestone are as follows:—

Material	Fe	SiO_2	Al_2O_3	P	Mn	Ca O	Mg O	S	Ash
Ore	52.5	8.-10	1.25-3.0	.015-.61	.08-3.6	0.20-9.15	0.10-3.03	.006-.14	.....
Coke	2.86	6 16	2.57	0.013	.....	0.40	0.26	1.26	10.0-12.0
Limestone	0.69	3.96	0.32	0.10	.....	39.25	10.85	0.097	.....

The Blast Furnace

The furnace, 64 feet 6 inches high, 13 feet in diameter at the bosh, with 8 foot 6 inches hearth and 10-foot throat diameter, is located with its back to the docks and is hand filled, the stock being hoisted in buggies by a double cage elevator controlled by an automatic Crane steam engine. The furnace shell is carried by 8 cast iron columns resting on a granite faced, concrete foundation 32 feet square at its base and 24 feet square at the top. The hearth, protected by three-inch cast iron jackets fitted with interior pipe water coils, is pierced for 8 tuyeres, the bosh being cooled in the same way as the hearth with cast iron water coil jackets. The downcomer is connected with the furnace through a short tunnel head, and is provided with suitable explosion doors and a single bleeder. A cylindrical dust catcher of the ordinary type is placed at the foot of the downcomer, the gas after passing the dust catcher being conveyed to the hot blast stoves and boilers through large mains provided with dust legs.



Canada Iron Furnace Company, Midland. View of blast furnace.

The hot blast equipment consists of three Foot stoves, 60 feet high and 16 feet in diameter, of the two-pass type, erected in line on a granite faced concrete foundation 60 feet long and 27 feet wide. The stoves are provided with water-cooled hot blast and chimney valves, and are capable of heating the blast to about 1,400 degrees F. The foundation for a fourth stove 75 × 19 feet is in place, and when this additional unit is constructed it will add materially to the efficiency of the system. The steel draft stack for the stoves, 174 feet high and 8 feet 6 inches in diameter, is carried on a massive concrete base 26 feet square at the bottom and 20 feet square at the top, standing 21 feet high and faced with granite. The stack is lined with fire brick and is provided with a vertical outside ladderway extending to a small circular platform at the top.

The three blowing engines are installed in a solid brick building 67 feet 6 inches long by 40 feet wide and 48 feet high. Two of the engines installed at the time the plant was under construction, were manufactured by The Columbus Machine Company of Ohio; they are vertical high pressure Corliss engines with 36-inch steam cylinders, 72-inch air cylinders and 48-inch stroke. The third installed during 1906 is a Mackintosh and Hemphill vertical high pressure engine with 34-inch steam, 72-inch air and 48-inch stroke. Both the air inlet and discharge valves of all three engines are of the ordinary gridiron type. At 26 revolutions the three engines combined will deliver about 17,600 cubic feet of air per minute. The pumping machinery for furnace and stove circulation, also for fire purposes, consists of two Gordon Duplex pumps 16 x 10 x 12 inches; for boiler feed purposes, there are one Gordon Duplex 8 x 5 x 6 inches and one Worthington pump 10 x 5 x 10 inches. A steel water tank 12 feet in diameter and 40 feet high, holding 28,000 gallons is installed on a hill behind the furnace 72 feet above the level of the bay, but is only drawn on in case of emergency. The electric light plant consists of a 25-kilowatt generator connected with a 9 x 10-inch engine, this equipment having ample capacity to meet requirements.

The boilers are installed in two brick buildings, the largest of which adjoins the engine room and contains four 250-h.p. McDougal return tubular boilers fired with furnace gas which enters the boiler room through an overhead main. In the smaller building alongside are placed two additional McDougal boilers of 150-h.p. each, also fired with furnace gas. All boilers have separate stacks, the whole installation developing 1,300 horse power and delivering steam to the engine room at 125 pounds pressure. Coal is used for auxiliary firing, but very little is consumed.

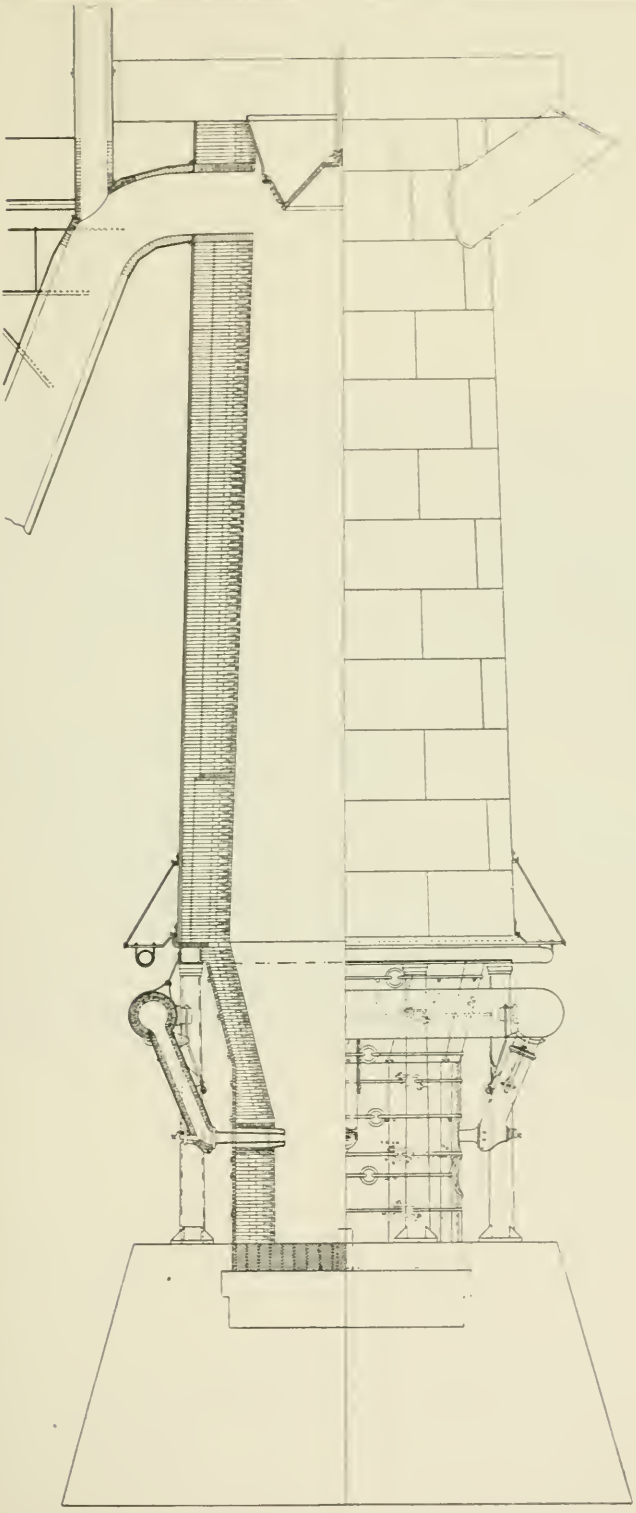
The cast house in front of the furnace is built of brick with heavy wall pilasters, and is 165 feet long by 40 feet wide. The walls are erected on solid concrete foundations faced with granite, and are provided with large sliding doors to facilitate the removal of the pig iron and scrap. The roof is constructed of steel and wood, covered with fire proof cement. All the iron is cast in sand moulds, the pig beds being 5 feet above the yard level, and after being cooled and broken the iron is thrown on cradles suspended from an overhead trolley and conveyed through the end doors of the house to a transfer platform where it is loaded direct in cars for shipment, or may be taken to the iron storage yard. During the open season of navigation a large amount of bessemer iron is shipped by boat to The Algoma Steel Company, the iron cars as they are loaded at the furnace being transferred to the dock and the boats loaded by means of the McMyler cranes.

Slag is handled hot in two 10-ton Dewhurst slag ladles,—one side-dump and one end-dump,—and is conveyed to the outskirts of the yard where it is used for filling purposes. The ladles are provided with interchangeable thimbles of cast iron, and when dumped the skull of congealed cinder falls out itself, doing away with the necessity of cleaning the ladles.

About 17,500 cubic feet of air per minute is delivered to the furnace through eight 5½-inch tuyeres at 6½ to 7½ pounds pressure per square inch, the blast temperature averaging 1,100 F. The furnace makes on an average 115 tons of bessemer iron daily, on a fuel consumption of 2,800 lb. of coke per gross ton of pig, from an ore mixture yielding practically 48 to 50 per cent. of pig iron. The charge is made up as follows:—

Coke	6,000 pounds
Ore	9,200 "
Dust	600 "
Mixed scrap	500 "
Limestone, average	3,500 "

From 5 to 10 per cent. of the ore charge is blown out on top and after being thoroughly wetted down this dust is recharged in small amounts, forming a constant item on the charging sheet. When running on Bessemer iron, the slags made will



Canada Iron Furnace Company. Lines of blast furnace.

average 34.5 per cent. silica with 9.5 to 10.5 per cent. of alumina. On foundry iron the silica is reduced 1 to 2 per cent., and the alumina increased a correspondingly approximate amount.

The following is a list of actual analyses of the Bessemer iron made in one day's run:

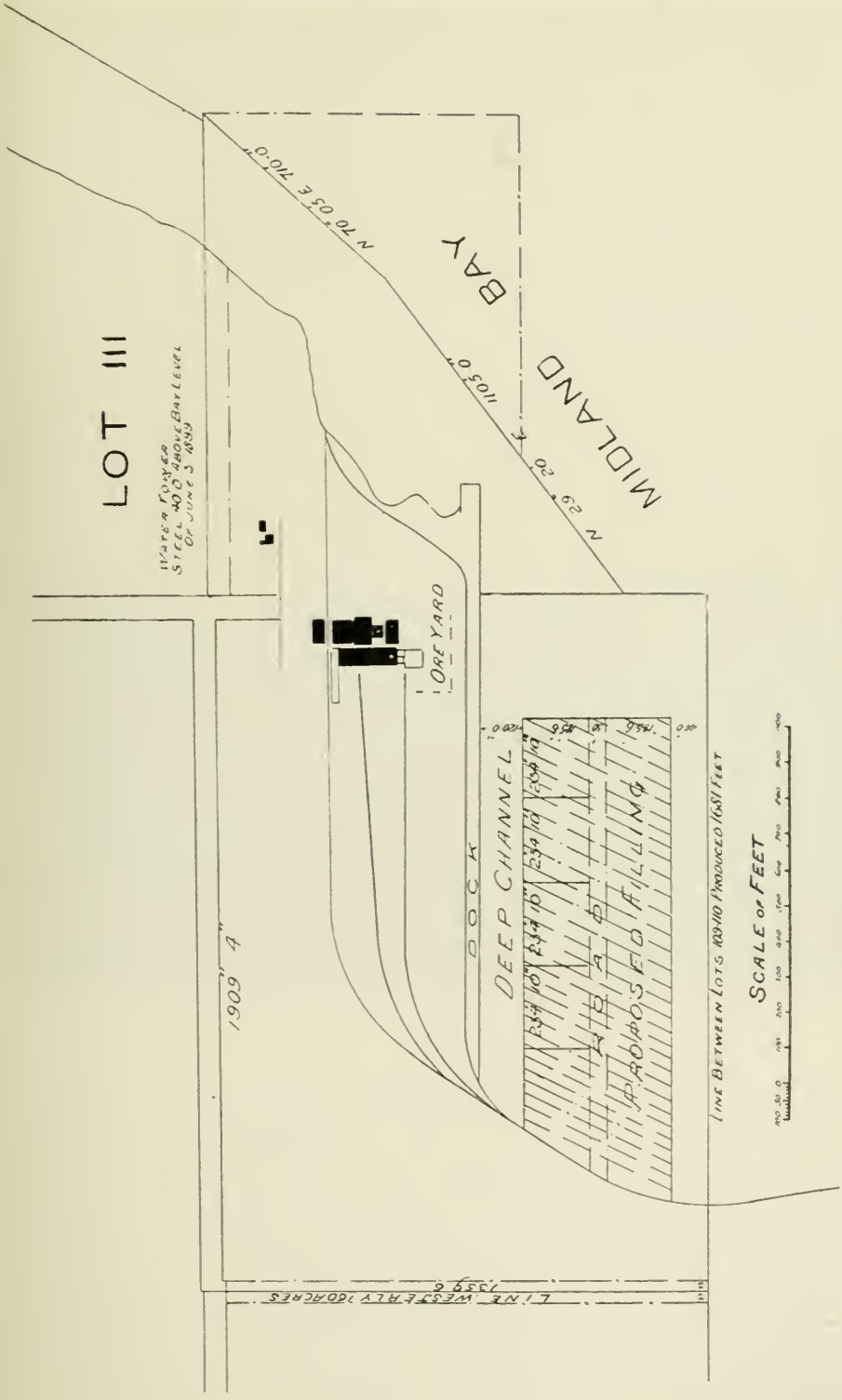
Si	S	Phos	Mn
1.04	0.041	.....	.....
1.08	0.034	.....	.....
1.11	0.029	0.088	0.68
0.98	0.039	.....	.....
1.04	0.041	.....	.....
1.32	0.039	.....	.....

Canada Iron Furnace Company. Flushing off slag into ladle.

Foundry iron will average from 2 to 3 per cent. silicon, 0.025 per cent. sulphur, 0.8 per cent. phosphorus, and about 0.6 per cent. manganese.

A machine shop and blacksmith forge are located in a 60 x 30-foot brick building at one side of the engine house, and contain all necessary tools for repair and other work. Adjoining the machine shop is a small building with the grinding and sampling apparatus for ores and cokes. A small electro-magnetic separator of the drum type is operated alongside the machine shop. This machine is used for saving the shot iron in the sand riddlings from the cast house, and has proved of considerable value in this capacity.

A large brick chemical laboratory 30 x 40 feet, situated some distance from the furnace to be free of dust and vibration, is one of the features of the plant. The building is divided into three rooms, the laboratory proper, the scale room, and the office, and is completely equipped in every detail for rapid and accurate analytical work. Two chemists are employed, one for day and one for night turn.



Canada Iron Furnace Company. General plan of works.

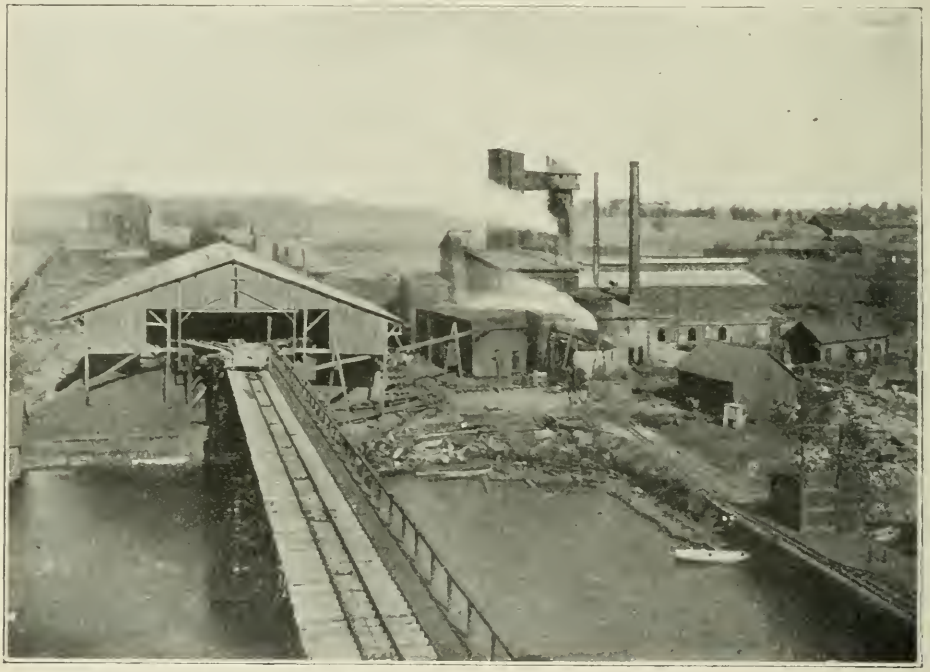
It is the intention of the company to build a second blast furnace with a capacity of 200 tons per day in the near future. This new stack, it is expected, will be about 75 or 80 feet high with an 18-foot bosh and 10 or 12-foot hearth, and will be equipped with a modern skip hoist and charging gear. The iron will be cast in sand and handled by an overhead crane carrying the combs to an hydraulic pig breaker.

The plans for this additional unit are prepared and but for existing conditions in the general iron market, construction would now be under way.

To Mr. George D. Drummond, superintendent of the plant, I am indebted for all of the above information, and I take this opportunity of expressing my thanks.

The Deseronto Iron Company, Limited

The Deseronto furnace is excellently situated about half a mile south of the town on the shore of the bay of Quinté. The plant was constructed during 1898, and



Deseronto Iron Company, Deseronto. View of blast furnace from ore docks.

on January 25th, 1899, was blown in with charcoal as fuel. The use of charcoal was continued until the end of 1906, when the Standard Chemical Company, Limited, also of Deseronto, manufacturers of charcoal and its by-products, found it extremely difficult to obtain cordwood at reasonable prices and had to abandon its contract with the furnace, which accordingly was blown out. It was then decided to manufacture coke iron, and after making general repairs on the plant all round, and increasing the furnace bosh a foot in diameter, another campaign was started on September 16th, 1907.

The fuel arrives by rail from the Connellsville district in Pennsylvania. This coke is of special low sulphur content, as the furnace (modelled on charcoal lines) is not adapted for the efficient removal of that element. The coke is shipped in hopper bottom steel cars and arriving at the plant, is forked into the charging buggies, or may be dumped from a trestle on stock piles alongside the furnace.

The ores are obtained chiefly from the American Lake Superior ranges, arriving via the Welland canal, and are unloaded at a 500-foot trestle dock 35 feet high extending outwards at right angles to the shore line. This trestle with 16 feet of water alongside, is provided with a McMyler hoisting drum operating three unloading whips equipped with ordinary hand filled buckets. The loaded buckets are dumped into a chute delivering to 6-ton cars, which run by gravity down the dock trestle to the ore bins, and after being dumped are returned with the assistance of a counterweight suspended at the water end of the trestle. The unloading plant as it stands has a capacity of 100 tons per hour. Attempts were made at various times to utilize the magnetites from Belmont, Blairton and other localities along the Central Ontario railway, but owing to the percentage of sulphur contained in these ores, shipments were few and far between. However, the opening up of the deposits at Bessemer controlled by The Mineral Range Iron Mining Company afforded further opportunity of utilizing native ore, and in consequence some shipments from these mines have been received.

Limestone obtained from cuttings along the Bay of Quinté railway between Strathcona and Yarker, is crushed at the furnace to about 2½-inch size by a 10 x 22-inch Blake crusher, driven by a 25-h.p. engine; the crushed stone is then elevated by a bucket conveyor to storage bins in the stock house and may be chuted into the charging buggies as required.

Approximate analyses of the ores, coke and limestone used by the company are given:

Material.	Fe	SiO_2	Al_2O_3	P	Mn	CaO	MgO	S	Ash	Fixed Carb.
Ore	51.-59.	8.-22.	0.68-2.0	0.05-0.5	0.07-0.92	0.22-3.25	0.17-3.17	0.001-.08	....	.....
Coke	.....	5.43	2.94	0.013	.....	.....	.....	0.80	10.00	89.51
Limestone	.....	3.97	1.91	0.002	.....	91.44 ($CaCO_3$)	3.50 ($MgCO_3$)	0.078	.....	.....

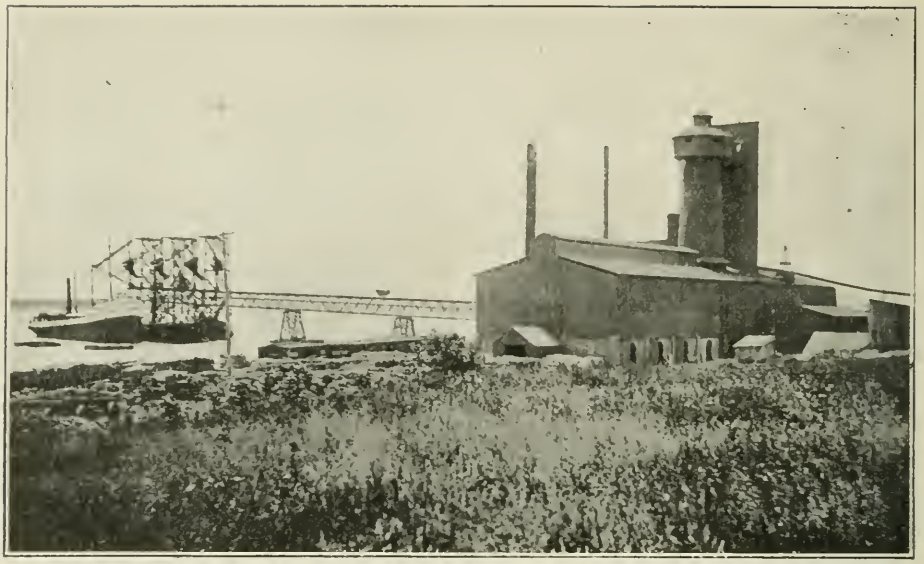
The Blast Furnace

The furnace is 61 feet high over all with a 10-foot 6 inch bosh diameter and a hearth diameter of 6 feet 5 inches. The steel shell is carried on a cast iron mantle supported by 8 iron columns, both bosh and hearth being protected by ¼-inch steel jackets cooled by outside water sprays. The hearth is pierced for 7 tuyeres. At the time of my visit 3-inch tuyeres were being used, the volume of blast, averaging 8,000 cubic feet per minute at about 6½ pounds pressure per square inch. The furnace is equipped with a 40-inch downcomer attached at one point and leading to a cylindrical dust catcher of the ordinary type, tapped by the stove and boiler gas mains.

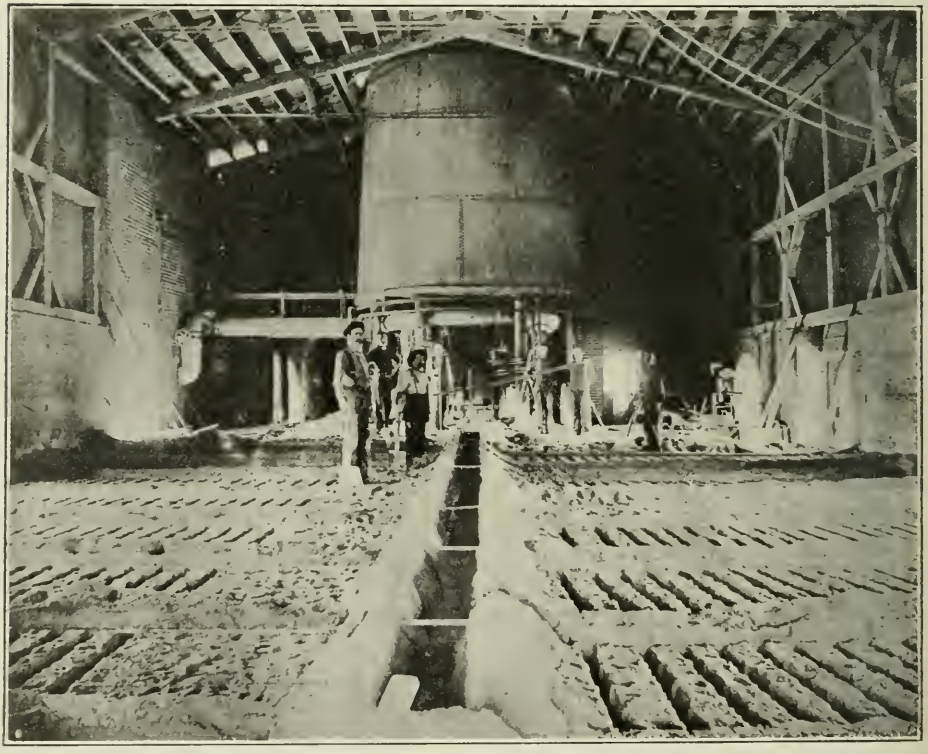
The hot blast equipment consists of two ordinary charcoal iron pipe stoves, each stove holding 36 U pipes, 9 feet high and 5 × 8 inches in section. This system will heat the blast to only 750 degrees F., which is found to be a serious drawback in operating the furnace with coke fuel.

The blast is supplied by a vertical blowing engine, 42-inch steam cylinder, 84-inch air cylinder and 4-foot stroke, made by The Columbus Machine Company. The pumping equipment consists of one 12 x 7 x 12-inch plunger pump on the dock, and one 6 x 10 x 6-inch pump in the boiler room, both pumping to an elevated tank, which supplies the water for furnace circulation and is also connected to two boiler feed pumps. The electric light for the plant and office building is generated by a Junior Westinghouse machine belt driven from a 15-h.p. vertical Westinghouse engine.

The boiler house adjoining the engine room contains four ordinary return tubular boilers of 75-h.p. each, supplying the engine room with steam at 85 pounds pressure.



Deseronto Iron Company. General view of works, showing ore unloading docks.



Deseronto Iron Company. Interior of cast house.

The furnace is hand filled, stock being hoisted by a pair of vertical elevators, belt driven from a horizontal engine through line shafting, with fast and loose pulleys. The ore bins, of which there are seven, are located in a wooden building 206 feet long by 90 feet wide, extending shorewards from the ore docks. The bins have a total capacity of 18,000 tons, and are connected to the furnace elevators by the C. W. Hunt system of narrow gauge track. The charging buggies running on this track will hold about 800 pounds of ore and are trammed from the bins to the furnace weigh scales, then elevated to the top and dumped.

The iron is cast in sand beds in front of the furnace, the cast house being 98 x 43 feet in plan. After the pigs are cooled and broken, they are conveyed in wheelbarrows to the grading platform, each bed being graded separately, and they are then shipped direct, or piled in the storage yard. Before the iron leaves the cast house, two samples are taken from each bed and combined, the combined samples from one bed being added to the samples of the next, making one average sample for every two beds; thus if there are 6 beds there will be three final samples, full analyses being made on each final sample. This method of sampling, although laborious gives very accurate analyses of each cast, and is satisfactory alike to the company and to the customer.

Analyses of iron made by the Deseronto company are as follows:

Grade.	Si	S	P.	Mn	G.C.	C.C.
Foundry	2.54	0.022	0.37	0.537	3.03	0.27
Malleable Bessemer	1.77	0.035	0.13	0.416	3.12	.....

Foundry Iron is graded by analysis as follows:—

Grade	No. I, soft	No. I, X	No. I	No. II	No. III
Silicon	3.10-2.80	2.80-2.50	2.50-2.20	2.20-2.00	2.00-1.75

The maximum limit for sulphur in foundry or malleable Bessemer is 0.05 per cent.

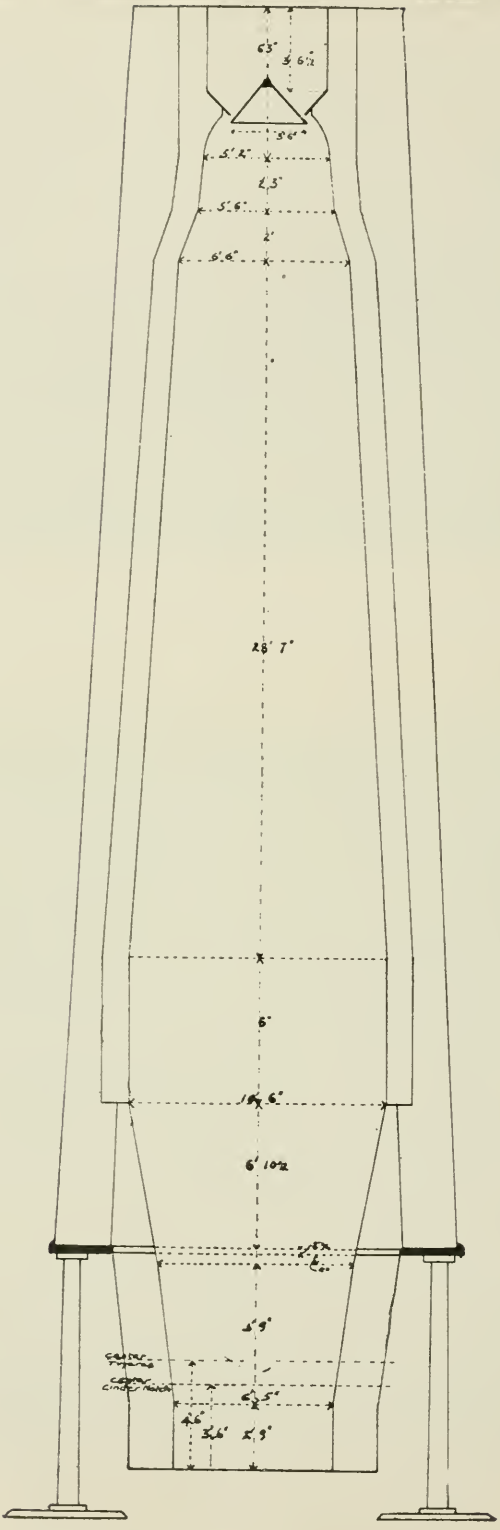
The slag made during recent coke practice is very basic, and will air slack readily. The idea of operating the furnace on this character of slag is to maintain sufficient heat in the smelting zone, by the high formation temperature of this cinder, the heat and basicity of the slag combining to eliminate sulphur. The slag is allowed to run from the furnace into circular holes in the slag yard, these holes being provided with a central iron rod terminating in a ring; and after the cinder has set, the blocks are picked up by a hand winch crane, transferred to carts and taken to the dump, the iron rods being removed for future use, as the blocks are broken.

About 35 gross tons of iron are made daily on a coke consumption that has averaged above 3,000 pounds of fuel per ton of product. This excessive consumption of fuel is due to the fact that the furnace is hardly of sufficient height for coke practice, and the hot blast installation will not permit of carrying the necessary temperature required for burning coke fuel. This want of balance in the equipment is illustrated by the fact that not more than 1.2 pounds of ore is carried per pound of coke, on a fuel charge of 6,000 pounds.

The plant, although small, has the reputation for turning out an excellent brand of pig, the charcoal iron made in former years always commanding the maximum market price, and being of special value in the manufacture of chilled car wheels.

The works are under the general superintendence of Mr. F. B. Gaylord, to whom thanks are due for all information and courtesies received at the time of my visit.[34]

[34] The Deseronto furnace went out of blast about the middle of March, 1908, and will remain inactive until there is a decided improvement in the general condition of the iron market.



Deseronto Iron Co. Blast furnace lines.

The Atikokan Iron Company, Limited

Of late years considerable attention has been given to the deposits of iron ores that are found in the Thunder Bay and Rainy River districts of northwestern Ontario. Various projects were put forward for the utilization of these ores, but it remained for The Atikokan Iron Company, Limited, organized in 1905, to demonstrate the practicability of roasting and smelting the high sulphur magnetites of the Atikokan range for the production of foundry iron.

The furnace plant of this company is located on the western extremity of the town of Port Arthur and is built fronting the shore line of Thunder Bay. Considerable difficulty was experienced in securing proper foundations, as the ground was low and swampy, necessitating the driving of hundreds of 22-foot piles which were afterwards capped with re-inforced concrete. The Company's property has a lake frontage of 1,800 feet with a depth of 3,000 feet, which is mostly muskeg and will be filled in with furnace slag, granulated for the express purpose of yard making.

Atikokan Iron Company, Port Arthur, Ont. General view of works.

Construction was started in 1906, the furnace being blown in on July 17th, 1907, and continuing in blast until the 14th of December in the same year, when owing to the unfortunate condition of the iron market, the works and mines were closed down until the outlook improved for a more profitable disposal of the product.

Roasting the Ore

The plant comprises a blast furnace with all modern improvements in the way of stock handling apparatus, an ore roaster operated by the blast furnace gas, and a battery of 100 beehive coke ovens.

The ore arrives in 50-ton drop bottom steel cars from the mines 131 miles southwest of Port Arthur on the Canadian Northern railway, and is discharged from a trestle to stock piles, or may be dumped direct to the bins feeding the roaster skip car. A McMyler hoist equipped with an orange-peel grab bucket serves to load the stock ore into cars, which are transferred over and discharged into the roaster skip bin.

The type of roaster adopted is the same as that in use at the Wiarton Furnaces, New Jersey, the Lebanon furnaces of the Pennsylvania Steel Company and the English plants of Bolckow, Vaughan and Company, Limited, Middlesbrough, and the Frod-

ringham Iron and Steel Company, Limited. As the fuel used is the waste furnace gases, economical engines, pumps, etc., are necessary in order to save fuel at the power plant. The roaster is carried on steel legs supported by solid concrete foundations, and is divided into 16 sections each containing separate combustion, roasting and chimney

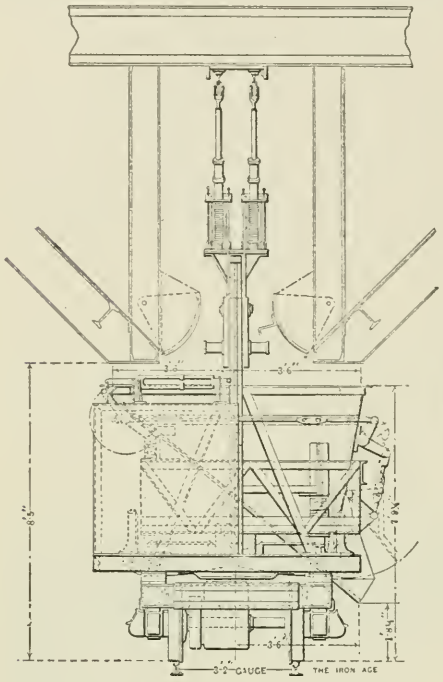


Fig. 5.—End View of Stock Transfer Weigh Car.

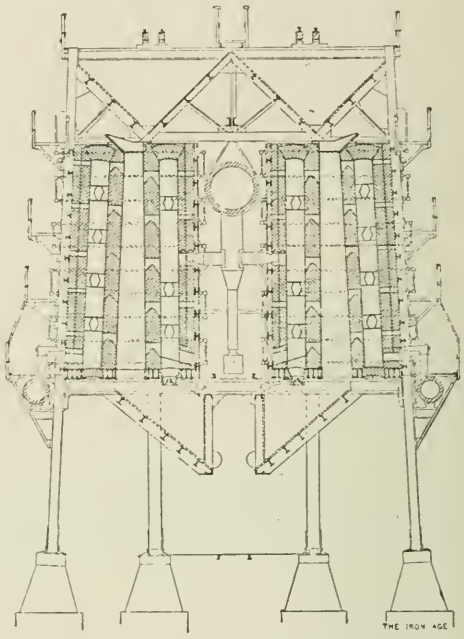


Fig. 4.—Sectional Elevation of the Ore Roasting Kilns, Showing Arrangement of Chambers.

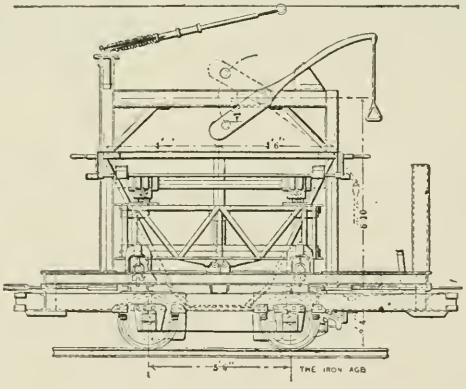


Fig. 6.—Side View of Transfer Car, Showing Lever for Opening Bin Chutes.

Atikokan Iron Company. Ore roaster and stock transfer weigh car.

chambers, the products of combustion passing through the ore to the chimney chambers where they are drawn by two Sturtevant 12-foot exhaust fans into a chimney. The draft, being controlled mechanically, admits of adjusting the supply of air according as the ore is fine or coarse, coarse ore requiring less air than the fine material.

The ore is elevated to the top of the roaster by means of a steam skip hoist discharging into an automatic railroad truck of the Mead-Morrison type, and is thence transferred to the roaster bins from which it feeds itself into the roasting chambers. The hot gases permeating the mass of ore heat it up to about 1,500 degrees F., driving off the sulphur, and as the action is one of oxidation converting the magnetic oxide to the peroxide form, corresponding to hematite, this change is beneficial in subsequent smelting operations. The ore remains in the roaster 24 hours, each chamber holding 25 tons, and the sulphur is reduced from an average of 2.5 per cent. in the raw ore to an average of 0.75 per cent. in the roasted product. The roasting chambers discharge into bins provided at their bottom, the ore being delivered therefrom into an electrically operated stock transfer scale car, which conveys the roasted ore to the furnace skip cars. Provision is also made so that the roasted ore may be delivered into ordinary railroad cars for shipment, the roaster being designed to permit of additional units being added later if required, and the present hoisting equipment being of ample capacity to meet any requirements in this direction.

Limestone is obtained from Kelly island in lake Erie, favorable rates being secured on ore freighters which would otherwise return empty to the head of Lake Superior from lower lake ports. The stone is unloaded at the Company's dock by 50-foot boom McMyler hoists equipped with orange-peel grabs, and is transferred to the furnace siding in drop bottom steel cars.

Coal for the coke oven plant is obtained from the New River and Crescent fields in West Virginia, transferred to boats at Lake Erie ports, and unloaded in Port Arthur at the coal docks of the Canadian Northern Coal and Ore Dock company. The coal is supplied to the iron company on contract by the Pittsburg Coal Company, Limited, of Port Arthur, who control the dock company, the iron company taking the coal as required from the dock pockets, in 6-ton hopper bottom electric lorries, and charging it direct to the coke ovens. In this way the iron company avoids the trouble and expense of storing a large amount of coal.

The coke ovens are erected between the furnace and the coal docks, and are constructed on piling, capped with reinforced concrete, this method of construction being necessary from the nature of the ground on which the battery is built. The one hundred ovens are of the ordinary beehive type, built back to back in a double row. Each oven is charged with 4.5 tons of coal yielding about 2.8 tons of coke, a yield of 62.2 per cent. The coke is drawn by hand labor and loaded into hopper bottom cars which are transferred over the coke pockets at the furnace. Forty-eight hour coke only is made, the physical qualities being but fair, as it is soft and of dark color. The chemical analysis, however, given in the following table, leaves nothing to be desired. The compositoin of the coal, coke and limestone are also shown.

Material.	Fe	SiO_2	Al_2O_3	P.	Mn	CaO	Mg O	S	Fixed Carb.	Vol. Matt.	Ash
Raw Ore	62.14	7.64	0.75	0.12	0.09	2.54	2.18	1.-4.	.....	.....	.....
Roasted Ore	60.06	9.33	0.98	0.162	0.12	2.93	2.3	0.2-0.75	.....	.....	.....
Coal A	.....	.....	.....	0.029	.....	.....	.....	0.66	71 24	22.12	6.64
" B	.....	.....	.....	0.005	.....	.....	.....	0.54	73.84	18.56	7.60
Coke	.....	2.90	2.45	.....	.....	0.34	0.10	0.66	88.08	3.89	8.07
Limestone	.....	1.53	0.19	0.003	.....	45.34	7.22	0.03	.....	.....	.....

The Blast Furnace

The blast furnace was designed with the view of increasing its capacity at any time to 200 tons per 24 hours with small additional cost. At present the stack is lined down to a capacity of 100 tons daily, the furnace being 75 feet high with diameters at the bosh and hearth of 14 and 8.5 feet respectively, the diameter at the throat being 9 feet. This lining may be enlarged for the second blast to 17 feet diameter at the bosh, with 11 feet hearth diameter, the present construction permitting of this alteration being

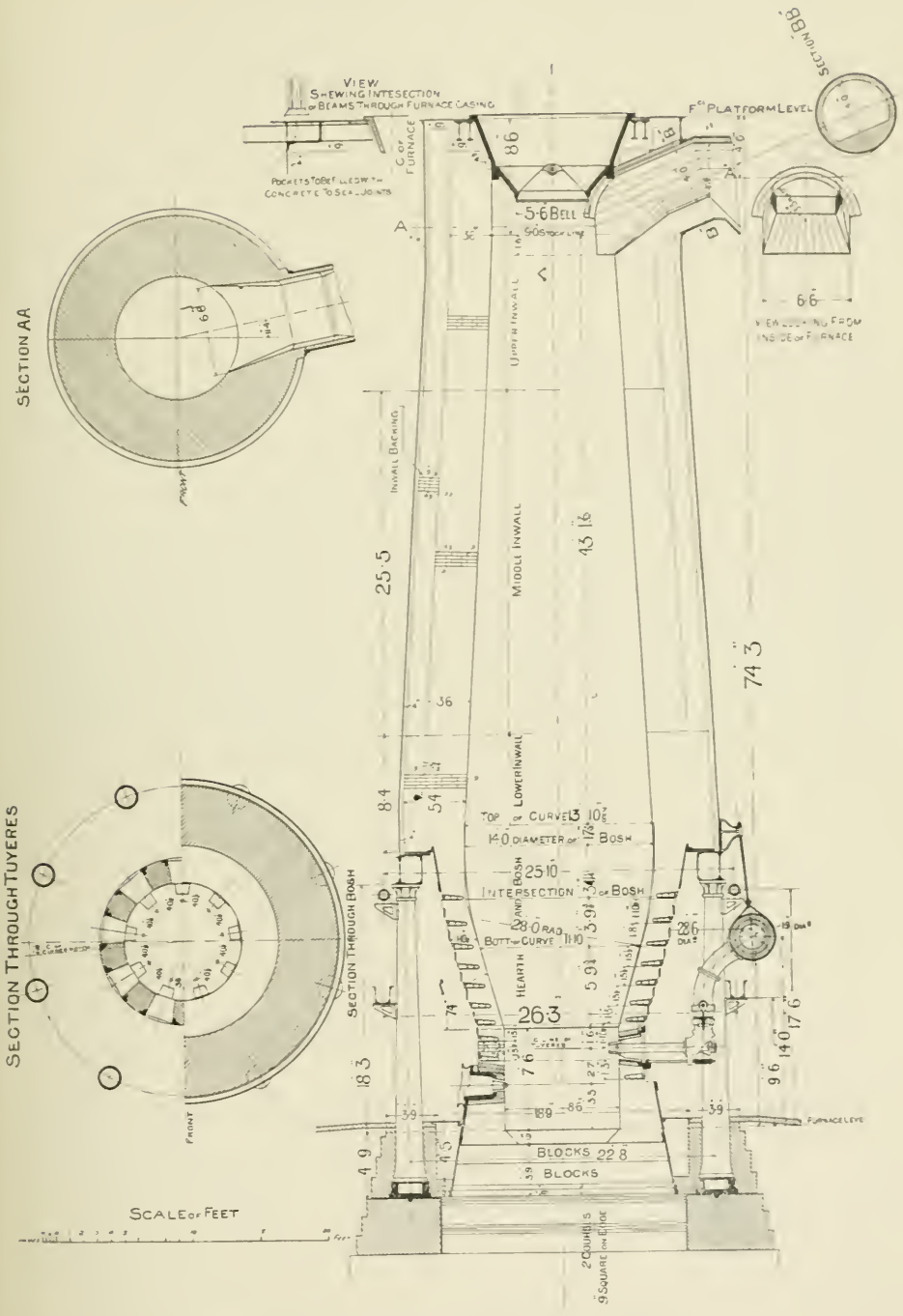
made without disturbing the shell or its supporting columns. The furnace bosh is equipped with bronze cooling plates of the Scott type, one row being placed below the tuyeres. The hearth is protected by a 1-inch steel jacket cooled by outside water sprays and is pierced for 9 tuyeres. Two slag notches are provided, one on each side of the furnace; one notch delivering the cinder over a short fall to an ordinary trough water granulator, while the other may be used for flushing off into ladles. By having the two notches the danger resulting from losing either of them is obviated.

The furnace charging apparatus consists of a double skip steam hoist and sealed top of the Roberts revolving type, the top gear constructed and operated in exactly the same manner as that described for B Furnace of The Hamilton Steel and Iron Company, Limited. The skip cars, each of 125 cubic feet capacity, are filled by means of an electrically operated scale car transferring the ore from the roaster and the lime-

Atikokan Iron Company, Port Arthur. View during construction of blast furnace and roaster.

stone from overhead steel bins. The bin system consists of one large split coke pocket provided with bottom chutes that deliver to either skip car, breeze being got rid of by suitable screens, and 5 smaller pockets for limestone and ore. As the ore bins are located at the bottom of the roaster, only two of the stock house pockets are utilized to provide against possible interruptions in the operation of the roaster. As distributed, the storage capacity of the stock house pockets is as follows: coke 250 tons, ore 500 tons, limestone 175 tons.

The furnace top is provided with a single 18-inch bleeder, and one circular explosion door four feet in diameter. The downcomer is connected to the shell at one point and at its lower end enters a centrifugal dust catcher of the Roberts type, the gas mains from this collector leading to the stoves and boilers. The hot blast stoves are situated in line behind the furnace, and comprise three Roberts-Cowper two-pass stoves 70 feet



Atikokan Iron Company. Lines of the blast furnace.

high and 18 feet in diameter, each having 18,500 square feet of heating surface. All valves are of the latest design, the hot blast and chimney valves being water cooled. These stoves are capable of heating the blast to 1,600 degrees F., but under ordiary conditions not over 1,200 degrees is maintained. The pyrometers for indicating temperatures are placed in the superintendent's office, and were supplied by the Cambridge Scientific Instrument Company, Limited; they are of the electric recording type.

The boilers are installed beside the stoves, both being contained in a steel and corrugated iron building behind the furnace. The battery consists of four Atlas water tube boilers of 225-h.p. each, manufactured by The Canada Foundry Company, Limited, of Toronto. The setting is of special Dutch oven design for the purpose of burning the furnace waste gases with efficiency, and has given very satisfactory results. Steam is supplied to the engine house at 125 pounds pressure. The chimney gases from the boilers and the hot blast stoves are taken by a steel draft stack 150 feet high and 8 feet in diameter, erected on a solid concrete foundation behind the boiler room.

The engine house built alongside the boiler room is of brick and steel construction and contains a disconnected cross compound condensing horizontal engine, manufactured by the Southwark Foundry and Machine Company of Philadelphia, high pressure cylinder 32 inches, low pressure 56 inches with 66-inch blowing cylinders and 48-inch stroke. The air valves are of the gridiron type operated positively, the air suction being through a conduit under the base of the blowing cylinders leading to the outside of the engine house, thereby providing a much drier air than if taken from inside the building. The engine is designed so that either the high or low pressure side may be operated independently. A jet condenser is arranged to operate with the waste water from the furnace and stoves, or with lake water. The pumps for furnace and stove circulation consists of two compound duplex steam pumps 14 x 32 x 14 inches with 20-inch water cylinders, suction direct from the lake; the boiler feed pumps are two, 9 x 5 x 10-inch of the ordinary plunger type. The pumping and condensing plant was supplied by The Canada Foundry Company, Limited. The electrical equipment consists of two 75 kilowatt generators directly connected with a pair of Robb-Armstrong engines, the system having ample capacity for all light and power requirements.

The cast house in front of the furnace is a steel and corrugated iron structure, 160 feet long and 55 feet wide provided with large sliding doors on both sides. The iron is cast in sand beds about 10 feet above the level of the yard, and after being cooled and broken is carried by hand labor to the side doors of the house and chuted to railroad cars alongside, to be either shipped direct or stored as required.

While in blast the furnace was blown with a volume of about 12,000 cubic feet of air per minute, through 4-inch tuyeres at a pressure of 5 to 7 pounds, the temperature of the blast being kept in the neighborhood of 1,200 degrees F.

The average output per diem was 110 tons, the highest tonnage made in any one day being 132 gross tons. The fuel consumption during the campaign averaged 2,600 lb., per gross ton of iron produced.

In the foregoing analyses it will have been noted that the ore, coke and limestone contain only small quantities of slag-forming ingredients and in order to secure a sufficient volume of slag for the removal of sulphur it was found necessary to use a certain proportion of gravel in the charge. This gravel is obtained from Nipigon Bay near Port Arthur and is of the following analysis.

Fe_2O_3	Al_2O_3	SiO_2	P	CaO	MgO	K_2O	Na_2O	H_2O
9.21	13.57	67 0	0.081	0	0.8	1.36	0 9	2.27

The normal furnace charge is made up as follows.—

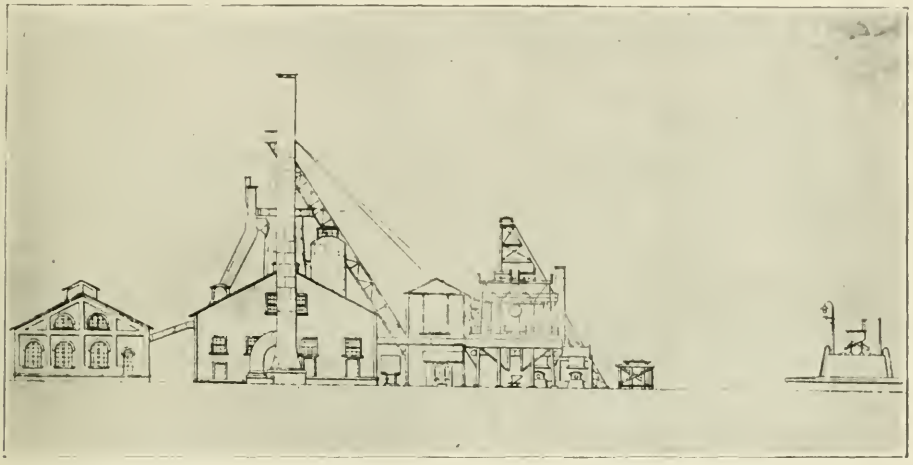
Coke	2,500 pounds.
Ore	3,200 "
Limestone	800 "
Gravel	100 "

It is apparent that the ratio of ore to coke is very low. This is necessitated by the fact that in order to keep the sulphur content of the iron within reasonable limits, the furnace is run with a very hot basic cinder.

Analyses of several Atikokan slags are supplied below:

SiO_2	Al_2O_3	S
27.52	11.36	2.07
33.40	10.60	1.91
34.30	14.00	2.15
29.37	12.78	2.50

The plant was built under the design and inspection of Frank C. Roberts and Company, Philadelphia, Pa., the construction being carried on under the supervision of the superintendent, Mr. Robert R. Jones, to whom thanks are due for all of the above information and the many courtesies received during my visit.



Atikokan Iron Company. Elevation east end of plant, showing power house, boiler house, skip hoists, roaster and bee hive coke ovens.

The Ontario Iron and Steel Company, Limited

This company has recently completed works in Welland, adjacent to the Michigan Central Railway yards, where they have installed one open-hearth basic furnace and complete foundations for a second, an open-hearth steel foundry, and a rolling mill equipped for the production of small rails, bars, angles and pipe skelp.

At present only the steel foundry is in active operation, although the rolling mill and open-hearth departments will, it is expected, be in commision within a short time.

During the last few years the steel casting industry has made rapid progress, turning out numerous machine parts and other pieces formerly made of wrought iron. The demand for this class of castings is now quite large, and the industry has a promising future in Ontario.

The foundry installation is contained in a steel and corrugated iron building 165x150 feet, divided into three bays, the central portion forming the moulding department, the second occupied by a 20-ton open-hearth furnace, and the third containing the chipping and sand storage section. The departments are equipped with three Niles cranes of 30, 5, and 5-ton capacity respectively, for the large and each of the smaller bays, besides several pneumatic jib cranes placed on either side of the casting floor. Two mould drying ovens each 21x60 feet, and one core oven 9x15 feet, are also situated in this building. The chipping department is provided with pneumatic hammers and chippers, air being supplied at 100 pounds pressure by a Canadian Rand compressor belt driven

from a 180-h.p. Canadian Westinghouse induction motor. There is also provided a shaper for machining heavy castings and a Norton grinder for general work. The open-hearth furnace of 20 tons capacity is of the ordinary stationary type, charged by hand labor. The fuel used is natural gas and oil, gas being piped to the plant from the company's own wells near Port Colborne, but as the supply is rather uncertain an auxiliary apparatus is installed at both furnaces for burning oil. The oil is stored in tanks outside the building, and is pumped to the burners where it is atomized and blown into the furnace by an air jet.

The open hearth department, contained in a steel and corrugated iron building 175 feet long and 75 feet wide, is at present equipped with one 25-ton hand charged basic furnace of the stationary type. Foundations for a second furnace are in place, and it is expected that this additional unit will be constructed at an early date. The building is provided with a 40-ton Niles travelling crane for handling the ladles and ingot moulds. Casting is accomplished by the bottom plate or group system, similar to the method employed by The Hamilton Steel and Iron Company, the small sized ingots being necessary as the rolling mill equipment does not include cogging or blooming rolls.

After being stripped, the ingots are placed on small flat cars and conveyed to the rolling mill, which is contained in another steel and corrugated iron building 300 feet long and 100 feet wide, equipped with a 10-ton Niles travelling crane. A continuous heating furnace placed at the entrance to this building, takes the ingots as they are received from the open hearth department, and after being raised to a sufficient temperature they are discharged on the tables of the 22-inch two-high roughing rolls, thence to the hot shears. The slabs are then passed through a re-heating furnace and conveyed to a 12-inch two-high finishing mill delivering to the cooling beds and shipping department. The 22-inch mill is driven by a rope drive from an 800-h.p. Westinghouse 3-phase induction motor. The 12-inch mill is driven in the same way by a 500-h.p. Westinghouse 3-phase motor, both motors running on a 2,200 volt circuit.

Power is supplied from one of the electric generating companies at Niagara Falls, the 3-phase current delivered at 12,000 volts being reduced to 2,200 for the rolling mill by three Canadian Westinghouse step down transformers, and stepped down from 2,200 to 200 volts for the foundry and machine shop by three Packard transformers.

Thanks are due to Mr. D. H. Blaney, superintendent and works manager, who conducted the writer through the several departments at the time of his visit.

Manufacturing Pig Iron in Eastern Ontario[35]

The question of smelting the magnetic ores found in the eastern part of Ontario has been in the past of general interest to all furnacemen operating blast furnaces in the Province. As has been pointed out, much of the ore is unfortunately not of first-class quality, being high in sulphur and in some cases rather silicious, so that, in addition to its low initial value, heavy freight charges in transportation from mine to furnace have added to the difficulty of its being smelted with profit.

Various projects have been put forward from time to time for the location of a blast furnace at some lake Ontario port that affords railway facilities for transporting the ore from the back townships, and although two such localities, viz: Kingston, the terminal point of the Kingston and Pembroke railway, and Trenton, the terminus of the Central Ontario railway, have been available for a number of years, the furnace plants have not been built. The advantages of placing the blast furnaces at a convenient lake port are twofold. First, the freight rates on ore are minimized, the greatest length of rail haul not exceeding 90 miles as against a haul of 200 to 400 miles to more western furnaces; and secondly, a central market location with ample transportation means by rail or water for shipment of the ore produced. Notwithstanding the attractive

[35] The writer wishes to make thankful acknowledgment to Messrs. Frank C. Roberts and Company of Philadelphia, who kindly prepared all calculations.

TABLE OF THE IRON AND STEEL WORKS IN ONTARIO.

Name of Company.	Blast Furnaces.									Converters, Open Hearth and Puddling Furnaces.			Finishing Departments.		
	No.	Height.	Bosh.	Hearth.	Fuel used.	Ore mixture. Native p.c.	Ore mixture. Foreign p.c.	Product.	Disposition of product.	Bessemer Converters.	Basic open hearth Furnaces.	Puddling Furnaces.	Rolling Mills.	Steel Foundry.	Finished Product.
The Algoma Steel Co., Ltd	1	70 ft.	17 ft.	11 ft.	coke	25	75	Bessemer Basic	Used	Two 4-ton acid convertors.	Two 40-ton furnaces	.....	1 rail mill	.....	Steel rails
do do do	2	80 ft.	17 ft.	11 ft.	coke	25	75	Bessemer	Used						
The Hamilton Steel & Iron Co., Ltd-.....	A	75 ft. 6 in.	16 ft.	10 ft.	coke	40	60	Basic Foundry Malleable	Part used and part sold.	.....	Two 40 ton Two 20 ton	4 double furnaces	Two	One small	Merchant bars, small rails, plates, forgings.
do do do	B	80 ft.	20 ft.	13 ft.	coke	25	75	Basic Foundry Malleable	Part used and part sold						
The Canada Iron Furnace Co., Ltd.....	1	61 ft. 6 in.	13 ft.	8 ft. 6 in.	coke	45	55	Bessemer Foundry Malleable	Sold	.....	.....	.....	.....	.....	.....
The Deseronto Iron Co., Ltd.	1	61 ft.	10 ft. 6 in.	6 ft. 5 in.	coke	15	85	Foundry Malleable	Sold	.....	.....	.....	.....	.....	.....
The Atikokan Iron Co., Ltd.....	1	75 ft	14 ft.	8 ft. 6 in.	coke	100	.....	Foundry	Sold	.....	.....	.....	.....	.....	.....
The Ontario Iron and Steel Co., Ltd.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	One 25-ton One 20-ton	.....	One	One large	Merchant bars, small rails, skelp, steel castings
The Electro Metals Co., Ltd.	Four Heroult furnaces 1000—1500 h. p. capacity, manufacturing ferro-silicon, ferro chrome, etc. One furnace, 400 h. p. capacity, manufacturing pig iron.														

sites presented by easy communication with the iron mines and a growing market in a populous manufacturing portion of the Province, there has been a noticeable hesitancy on the part of ironmasters to embark in the business of iron smelting in Eastern Ontario.

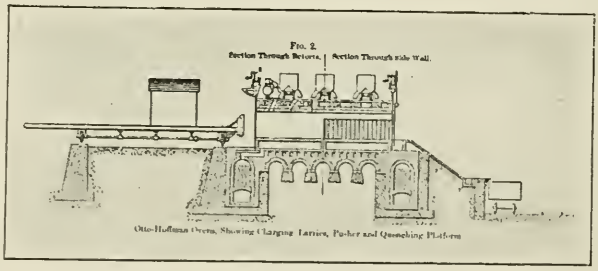
A battery of beehive coke ovens (by-products lost).

Conditions for the Industry

Doubts have been expressed of the probability of the district under consideration being able to supply a blast furnace of modern dimensions for any great length of time. It is true that the amount of merchantable ore mined is small, but if the furnace plant were supplemented with a magnetic concentrating mill and probably an ore roaster, numerous low grade deposits would become available, and the supply drawn from many sources would in the opinion of the writer be amply sufficient to meet all possible requirements.

Limestones of good quality for blast furnace use are found in many localities throughout the district, and in deposits of size that guarantee an ample supply being delivered to the furnaces for not more than $1.00 per net ton. The Provincial Geologist, Dr. W. G. Miller, is the author of a report published by the Ontario Bureau of Mines, entitled "The Limestones of Ontario," which contains full and accurate information concerning the deposits of limestones in the eastern part of the province.

The question of fuel is of paramount importance, as it controls in a marked degree the final costs of the pig iron manufactured. It is idle to speculate on the use of charcoal, because cordwood for its making can not be obtained in quantity nor at reasonable prices, therefore the only alternative is coke fuel. The problem may be



The Otto Hoffman by-product coke oven (by-products saved).

solved in two ways: either by importing coke direct from the Pennsylvania fields in the United States, or by importing coal and manufacturing coke in by-product coke ovens. If coke is imported, it may be brought in via Niagara Falls and will cost approximately $5.50 per net ton f.o.b. furnace. If it was decided to manufacture coke, the necessary

coal could be shipped to Charlotte, New York State, transferred to boats and unloaded at the oven docks on the Ontario side for about $2.75 per net ton, and the cost of coke manufactured therefrom would approximate $3.86 per net ton delivered to the furnace. The installation of a by-product coke oven plant which would have to be equipped with labor-saving coal and coke handling machinery, would require a good deal of capital, but as the use of this coke manufactured alongside the furnace plant means a saving of $1.64 per net ton over the use of imported coke the return on the capital invested would be considerable. It is assumed that by-product coke ovens would be more desirable than the ordinary beehive type, as the saving of the distillation products is not only in keeping with the modern practice, but is absolutely essential for the economic production of coke from high priced coal.

The cost of the ore mixture at the furnace will depend directly upon the mining and concentrating costs of the low grade ores. If a roaster is erected in conjunction with the furnace, a considerable amount of high sulphur magnetite could be treated therein without resort to the concentrating process. This complicates matters slightly, and it might be found more profitable to concentrate all ores with subsequent nodulizing or briquetting. However, it will be assumed that from 50 to 60 per cent. of the ore mixture will consist of nodulized or briquetted concentrated ores, which will cost say $4.00 per net ton at the furnace, and that the balance of high sulphur ores when roasted will cost approximately $2.60 per net ton at the furnace. It is also assumed that the blast furnace will be of 250 gross tons capacity per 24 hours and equipped with all modern labor saving appliances.

The following costs of production and estimated profits were prepared by the well-known firm of Frank C. Roberts and Company, of Philadelphia, Pa., and Middlesbrough, England, blast furnace designing and constructing engineers. This engineering company has of late completed the erection of two modern blast furnaces in Ontario, namely, No. 1 stack of The Atikokan Iron Company at Port Arthur, and B furnace of The Hamilton Steel and Iron Company. Descriptions of these furnace plants will be found elsewhere in this report, and it may be stated that both The Atikokan Iron Company and The Hamilton Steel and Iron Company are well pleased with the construction and operating efficiency of their furnaces. The figures quoted in this estimate, should (it is hoped), demonstrate that the smelting of eastern Ontario magnetites can be made a profitable undertaking if carried out along the lines suggested. The estimate may be considered a conservative one, as it comes from an enginering firm, possessing valuable experience in the manufacture of iron, and there can be no doubt that it fairly represents the expected profits accruing from such an industry.

The following explanatory letter from Mr. Frank C. Roberts should be studied in conjunction with the estimate:—

Philadelphia, April 1, 1908.

Dear Sir,—We are sending you to-day the following:—

1st. Estimates of cost of production of pig iron and coke.
2nd. Blue print of drawing No. 3603—General arrangement of blast furnace and coke plant.
3rd. Blue print of drawing No. 3188—General plan, Atikokan Iron Company.
In connection with the foregoing, please note the following:—

By-Product Coke. The estimates of cost of producing coke, etc., are based upon by-product ovens with the complete chemical plant required for the recovery of the various by-products mentioned in the statement of cost of production. We have assumed a cost of coal of $2.75 net per ton; should you decide to use any other price, it would be a simple matter to make the correction in the estimate.

It should be borne in mind that the cost of by-product coke will be largely influenced by the price to be obtained for the surplus gas. We have assumed 15 cents per thousand cubic feet, but if it is possible that the gas can be sold for illuminating purposes, the price may be in excess of this amount.

Pig Iron. The estimate of cost of $700,000 is not that which would ordinarily apply to a furnace plant. In most cases an estimate of the cost of a furnace plant includes the furnace with its equipment, but does not embrace such items as spare parts, office

building, laboratory, yard tracks, etc., etc. We have thought it best in this case, however, (since it is an entirely new operation) to include everything necessary for the operation of the plant; as a consequence, the estimate of cost is considerably higher than it would otherwise be. It frequently happens that a furnace plant is built as an addition to a plant already in existence, so that many of the items included in the estimate under consideration, do not need to be taken account of.

It is also to be noted that the estimate includes a roaster having a capacity of about 400 tons, whereas only 200 tons of roasted ore are needed. If it is thought wise to instal roaster capacity for 200 tons only, the estimate would be reduced about $20,000.

Iron Ore. It is assumed that of the 450 tons of ore required per day, 200 tons will be obtained from the Coe Hill, Robertsville, Calabogie and Glendower mines, and that this ore will require roasting. If ten cents per ton be allowed for roasting, this ore will cost at the furnace $2.60 per ton based upon the prices you gave us.

The remaining 250 tons have been assumed to be nodulized concentrates at $4.00 per ton. The cost of this mixture would approach $3.37 per ton. It is quite probable that the mixture finally used would not be that given above, but for the present purposes we think that the price of $3.50 per ton is sufficiently near the average price to warrant its use.

General. It is to be noted in connection with the estimates of cost that they are based upon the assumption that there will be no extraordinary expense incurred in foundations or in water supply.

Estimated Profits. You will notice that we have not inserted the bounty on pig iron and as a consequence the profits are not completely shown or the return on the investment. We are not familiar enough with the situation to insert this item, and therefore leave it for you to do; kindly advise us of what addition you will make in order that our records may be clear.[36]

If any statistics are available giving the price of foundry iron in Eastern Ontario, for any term of years, you might find that the price of $16.75 given in our statement is too low and that profits to be expected from a blast furnace would be greater than those shown.

In connection with the coke we have shown the profit over the selling price named by you for coke at the proposed site.

Blue Prints. Drawing No. 3,603 shows an arrangement of two furnaces with coke plant capacity for both; the furnace to be first built, together with coke plant, roaster, etc., are shown in heavy lines, whereas the second furnace, coke plant, etc., are shown in dotted lines. We have indicated the plant as located alongside of a dock, but have not included in our estimates, either the value of the land or the cost of the dock.

Drawing No. 3188 shows the general plan of the plant of The Atikokan Iron Company, and we are sending it to you, thinking that it may interest you in connection with this matter.

In accordance with your instructions our figures are based upon the plant being built at ————, Ontario.

Should there be any further information that you desire, kindly let us know.

Yours truly,

(Signed) Frank C. Roberts & Co.

P.S.—We wish to particularly call your attention to the fact that costs of production carry a depreciation charge of 5 per cent. of the cost of the plants—both coke and furnace.

F. C. R.

Cost of Manufacturing By-Product Coke

Capacity	300 net tons per 24 hours.
Yield in furnace coke	73 per cent.
Daily coal requirements	411 net tons per 24 hours.
Cost of coal alongside of dock	$2.75 per net ton.
Estimated cost of coke plant	$775,000.00
Operating cost of plant; per net ton coal—	
Coal unloading	.080
Labor, office expenses, etc	.311
Supplies	.080
Electric Current	.031
Water	.008
Repairs	.120
Total	.630

[36] The writer has inserted the bounty rate of 90 cents for the year 1910, and has added calculation of profits without considering the bounty, using Connellsville and by-product coke. The bounty Act of 1907 will terminate with the end of the calendar year 1910.

Cost of Manufacturing By-Product Coke.—Continued.

Daily Expenditures:		
411 net tons of coal at $2.75	$1130.25	
Operating cost at 0.63 per ton	258.93	
Depreciation, 5 per cent	110.00	
		$1499.18
Daily Receipts:		
6 gals., tar per net ton coal—		
2466 gals. at 0.018	44.39	
3¼ lbs. $N H_3$ per net ton coal—		
1336 lbs. at 0.08	106.88	
411 gals. benzole at 0.15	61.65	
2250 cu. ft. surplus gas per net ton coal—		
924,750 cu. ft. at 0.15	138.71	351.63
Daily cost 300 net tons furnace coke at ovens		$1147.55
Cost per net ton of coke at ovens	3.82	
Delivery to furnace	.04	
Cost of coke per net ton delivered at furnace	3.86	

Cost of Manufacturing Foundry Pig Iron

Capacity required		250 gross tons per 24 hours.	
Number of furnaces		One.	
Cost of ore per ton delivered at furnace		$3.50 per gross ton.	
Ore per ton of Iron		1.8 per gross ton iron.	
Cost of ore per gross ton of iron		$6.30	
Cost of by-product coke at furnace		3.86 per net ton.	
Coke per gross ton iron		2400 lb.	
Cost of coke per gross ton iron		$4.63.	
Cost of limestone at furnace		1.00 per gross ton.	
Limestone per gross ton iron		1200 lb.	
Cost of limestone per gross ton iron		.54	
Estimated cost of furnace plant, including roasters		$700,000.00	
Cost of manufacture with by-product coke:			
Ore mixture		$6.30	
Limestone		.54	
Coke, (by product)		4.63	
Incidentals, supplies, etc	.50		
Relining	.25		
Labor	.80		
Salaries, office expenses, etc	.25		
Depreciation, 5 per cent	.40		
		2.20	
Cost of pig iron per gross ton		$13.67	
Cost of manufacture with Connellsville coke:			
Ore mixture		6.30	
Limestone		.54	
Coke, 2400 lbs. at $5.50 per net ton		6.60	
Labor, supplies, etc., as above		2.20	
Cost of pig iron per gross ton		$15.64	
Cost of Plant:—			
Furnace plant proper		$625,000.00	
Roaster, 400 tons capacity		75,000.00	$700,000.00
By-product coke plant, capacity 300 tons daily			775,000.00
Total cost			$1,475,000.00

Estimated Profits

Pig Iron:—There are no available records of the prices at which pig iron has been sold in eastern or central Ontario for a period of years. It would seem conservative to base the estimate of profits on the average price of No. 2 foundry at Chicago for the ten years 1897-1906. The published records of the Iron Trade Review give this average as $16.75 f.o.b. Chicago. If we assume this as the average price, f.o.b. eastern Ontario points the profits will be as follows:—

Using Connellsville coke and including bounty of 1910:	
Average price No. 2 foundry at furnace	$16.75 per gross ton,
Cost with Connellsville coke	15.64 " "
Profits per ton	1 11 " "
Annual tonnage, (345 days)	86,250 gross tons.
Profit, (annual) 86,250 tons at $1.11	$ 95,737.50
Bounty, 86,250 tons at .90 for year 1910	77,625.00
	$173,362.50
Return on Investment of $700,000	24.76 per cent.
Without the bounty, using Connellsville coke:	
Average price of No. 2 foundry at furnace	$16.75 per gross ton.
Cost with Connellsville coke	15.64 " "
Profit per ton	1.11 " "
Annual tonnage (345 days)	86,250 gross tons.
Profit, (annual), 86,250 gross tons at $1.11	$95,737.50
Return on investment of $700,000	13.67 per cent.

Coke:—Assuming that the selling price of Connellsville coke at the furnace, i.e., $5.50, be charged against the furnace operations and credited to the coke plant, and that the cost of production is as per statement, the yearly profits from the coke plant would be as follows:—

Selling price at the furnace per net ton	$5.50	
Cost of production	3.86	
Profit per ton	1.64	
Annual tonnage, (345 days)	103,500 tons.	
Profit, (annual), 103,500 tons at $1.64	$166,014	
Return on investment of $775,000	21.5 per cent.	
Profits from combined coke and furnace plant, (with the bounty):		
Yearly profit from pig iron	$95,737.50	
Bounty	77,625.00	
		$173,362.50
Yearly profits from coke plant		166,014.00
Total yearly profits		$339,376.50
Return on Investment of $1,475,000.00	23 per cent.	
Profits from combined coke and furnace plant, (without the bounty):		
Yearly profits from pig iron	$ 95,737.50	
Yearly profit from coke plant	166,014.00	
Total yearly profits		$261,751.50
Return on investment of $1,475,000	17.74 per cent.	

In the opinion of the writer, the average price for No. 2 foundry iron, given in the estimate at $16.75, is considered too low, and therefore does not truly represent the situation. In connection with this the following letter will be of interest:—

Philadelphia, Pa., April 6th, 1908.

Dear Sir,—Referring to our recent letter, we would be much obliged if you would let us know what you find the average price of No. 2 Foundry Pig Iron to have been at —— for the last ten years. Please state whether this is per net or per gross ton. In addition, if you can do so, kindly give us the average price per net ton of Connellsville coke at —— for the last ten days.

In showing the profits in the operation of the furnace, the average prices both for coke and pig iron should be used. We think that the statement made by us is hardly fair to the situation, since it gives a low price for iron and a high price for coke. In other words, a statement of the profits to be expected from the furnace, based upon average prices for both coke and pig iron, would show the furnace to be a better investment than our figures indicate.

Yours very truly,

Frank C. Roberts & Co.

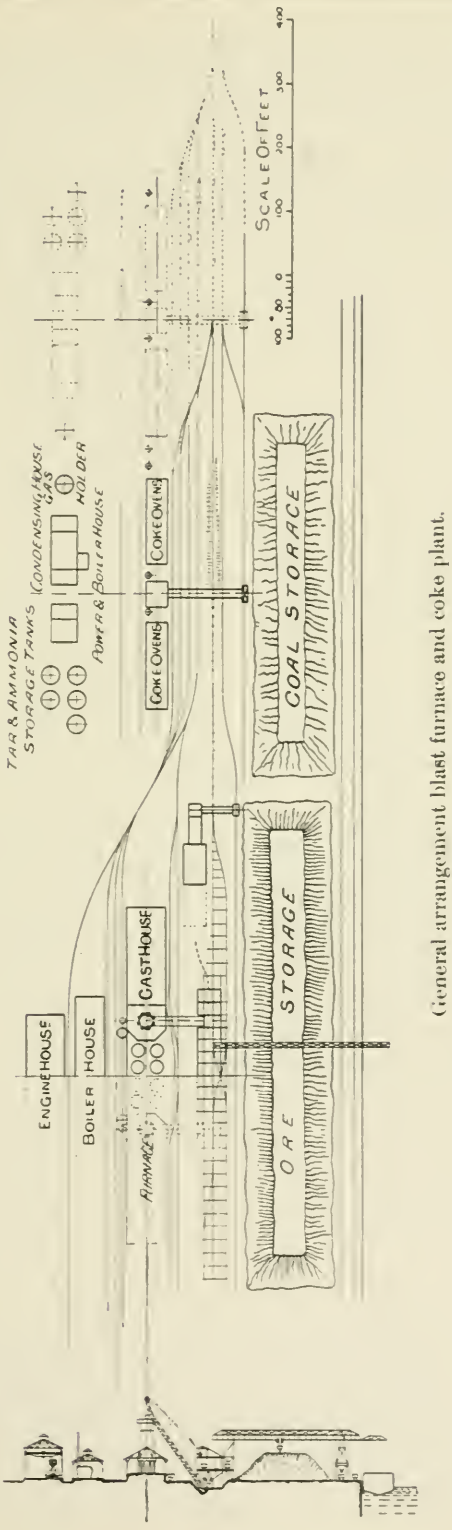
An effort was made to obtain reliable data on this point from a well-known firm of iron and steel merchants doing business in Ontario, but the request was not granted. However, definite information was secured from consumers who stated that during the past ten years they had paid a maximum of $25.00 and a minimum of $17.00 per gross ton of foundry iron delivered at their works; the average price per gross ton of No. 2 foundry being in the neighborhood of $19.00. It should be pointed out that these figures are not official trade price averages, as they are representative of one or two cases only. During the present depressed condition of the iron market, the price for No. 2 foundry in eastern Ontario will approximate $17.00 per gross ton.

The figure of $5.50 per net ton for Connellsville coke delivered, is taken at a maximum, but it is quite possible that this price could be reduced if large quantities were contracted for.

Pig Iron and Steel by the Electric Furnace

Of late years a great deal of attention has been paid to the manufacture of certain ferro alloys, pig iron and steel by the electric process. No attempt will be made here to give detailed descriptions of the various electric processes, but rather a short summary of what has been accomplished in this direction, within the Province of Ontario, during the past few years.

Until 1904 very little had been heard in Canada about the electric furnace and its application to the manufacture of iron and steel, and it remained for Dr. Haanel,



General arrangement blast furnace and coke plant.

of the Mines Department, Ottawa, to bring this new phase of metallurgy before the public in a most interesting publication, entitled "Report of the Commission Appointed to Investigate the Different Electro-Thermic Processes for the Smelting of Iron Ores and the Making of Steel, in Operation in Europe." This report not only furnished full descriptions of the various electric furnace plants operating in Europe, but also supplied complete data covering the costs of production, together with mechanical and microscopic tests of the steels produced by several different processes.

During the winter of 1905-1906, a small experimental furnace was erected and operated at the plant of the Lake Superior Power Company at Sault Ste. Marie. This test, extending for about a month and a half, was conducted under the supervision of Dr. Haanel, who was assisted by Dr. Heroult in the design and subsequent operation of the furnace. The result of the experiment was the production of about 55 tons of pig iron from various ore mixtures, some of which were high in sulphur. Not only was foundry iron of good quality made, but the production of pig iron containing nickel and titanium was accomplished with very little trouble. Full data covering the results obtained from the series of tests conducted at Sault Ste. Marie have been published by the Mines Department, Ottawa, and can be obtained by any one interested enough to make application for a copy.[37] The experimental plant used by Dr. Haanel was subsequently purchased by The Lake Superior Corporation, who operated it for some time, producing in the neighborhood of 150 tons of nickel pig.

During the experiments at Sault Ste. Marie, Dr. Haanel had associated with him Mr. R. Turnbull, an expert in the design and operation of electric furnaces. In July 1906 Mr. Turnbull undertook the erection and operation of an electric furnace in Shasta county, California, for Mr. H. H. Noble, a resident of San Francisco. The results of this trial have been given in "The Mining World" of Chicago,[38] and also by Mr. Turnbull himself in Vol. XI of the Journal of the Canadian Mining Institute.[39] After returning from California, Mr. Turnbull, with Mr. R. H. Wolff, of New York City, organized the Electro Metals Company, Limited, with headquarters at Welland, Ont., for the production of pig iron by the electric process. The site was particularly well chosen, for not only were transportation facilities first class, but also the proximity to Niagara Falls assured the securing of electric power at reasonable cost.

The original idea of manufacturing pig iron at Welland was not carried out at first because of expected improvements that were being made in a new type of furnace designed by Dr. Heroult, and until Dr. Heroult's furnace had been tested, the Welland plant was operated for the production of ferro-silicon, with the expectation of manufacturing ferro-chrome and ferro-tungsten at a later date. This spring construction on a 400-h.p. furnace for the smelting of iron ores was started, and if the experiment is successful, it will be followed by the installation of a much larger furnace.

In view of the interest evinced in the production of iron and steel electrically, it may be worth while to indicate in what manner successful results may be expected, and explain some of the advantages and disadvantages of the process. The following extracts are taken from a paper read by Dr. Stansfield of McGill University before The Canadian Mining Institute in March, 1908, and the writer wishes to make grateful acknowledgment of Dr. Stansfield's permission for the unrestricted use of his valuable monograph.[40]

The Electric Process of Steelmaking

In the ordinary metallurgy of iron the ore is smelted in a blast-furnace with coke, producing pig-iron. This is an alloy of iron with some 2 to 4½ per cent. of carbon, ½ to 4 per cent. of silicon and small quantities of other elements. It is decidedly more

[37] Preliminary Report, on the Experiments made at Sault Ste. Marie, Ont., under Government auspices, in the smelting of Canadian iron ores by the Electro-thermic Process, by Eugene Haanel, Ph. D., Dept. of Mines, Ottawa

[38] The Mining World, Volume 27, page 197.

[39] The Reduction of Iron Ores in the Electric Furnace, by R. Turnbull, St. Catharines. Journal of The Canadian Mining Institute. Vol. XI.

[40] Possibilities in the Electric Smelting of Iron Ores, by Alfred Stansfield, D. Sc., Montreal: Journal of the Canadian Mining Institute, Vol. XI.

fusible than wrought iron or steel, and on this account is very suitable for foundry purposes. Bessemer steel and open-hearth steel are made from pig-iron by removing from it in the Bessemer converter, or the open-hearth furnace, a considerable proportion of the carbon, silicon, etc., which it contains, the product being nearly pure iron, retaining a little carbon and some manganese.

Crucible steel is used for tools. It contains about 1 per cent. of carbon, and is made by adding the necessary amount of this element to pure varieties of iron or steel, and melting the material in crucibles so as to obtain a perfectly sound product.

Electrical energy has recently been employed to replace, in such operations, the heat which is ordinarily obtained by burning fuel. Electrical energy is somewhat expensive, and it was naturally employed at first for the production of the more valuable products, such as crucible steel, where the cost is of less importance. The electrical production of cast steel for tools and similar purposes may be accomplished in two ways:—(1) By melting down pure varieties of iron and steel with suitable additions of carbon and other ingredients, just as in the crucible process, but using electrical energy for heating instead of coke or gas; (2) By melting a mixture of pig-iron and scrap steel as in the open-hearth process, and removing the impurities, such as sulphur and phosphorus so thoroughly, by repeated washing with basic slags, that a pure molten iron is at last obtained. This can then be recarburized and poured into moulds. Both of these methods are now employed commercially for the production of good qualities of tool steel. The larger sizes of electrical furnace that have already been constructed hold five or ten tons, while the crucible will only hold about 80 lb., and the high efficiency of the electrical method of heating more than compensates for the greater initial cost of electrical energy as compared with heat derived from fuel. The resulting steel is found to be even better than crucible steel, and can be produced at less cost. It is, therefore, only a question of time until the crucible process shall be entirely replaced by the electrical process in all localities where electrical energy can be produced at a moderate figure.

Two forms of electrical furnace have been used for making cast steel:—(1) The Heroult steel furnace, which resembles an open-hearth furnace, through the roof of which hang two large carbon electrodes. Electrical connection is made to these carbon electrodes, and electric arcs are maintained between the lower end of each electrode and the molten slag in the furnace, thus producing the necessary heat. This form of furnace has been found to be very suitable for the second of the above processes, that is, the one in which pig-iron and scrap steel are melted together and refined until pure enough to convert into cast steel.

An entirely different form of furnace has been devised in which no electrodes are required. This furnace consists of an annular shaped trough containing the steel. This ring of steel acts as the secondary of an electrical transformer. An alternating current is supplied to a primary winding, and the primary winding and the ring of steel both encircle an iron core, as in the ordinary transformer. The alternating current in the primary circuit induces a very large alternating current in the secondary circuit, that is, in the ring of steel, and in this way enough heat is produced to melt the steel. This type of furnace has been constructed lately in somewhat large sizes holding as much as eight tons of steel and consuming 1,000 electrical h.p. It is apparently well suited for the first mentioned process, that of melting down pure varieties of iron and steel just as in the crucible process.

The amount of energy needed in these furnaces amounts to about 800 or 900 K.W. hours per ton of steel, using cold stock, or 600 or 700 K.W. hours when the pig-iron, which usually forms part of the charge, is supplied molten. This amount of electrical energy would cost more than the coal used in producing the same amount of steel in the open-hearth furnace, but the resulting steel is far more valuable than the open-hearth steel.

The above short account of the production of crucible steel in the electric furnace has been introduced, as this is the only commercial process for the production of iron or steel which is at present in operation. The present paper deals rather, however, with the electrical smelting of iron ores.

Electric Methods of Making Pig Iron

In reducing iron ore to a metal, iron can be obtained in a relatively pure state, such as wrought iron, and this was the method adopted by the ancient metallurgists in their small furnaces or hearths; but in the modern blast-furnace, with its higher temperature the coke which is needed for the production of heat carburizes the resulting iron, producing pig iron. In the electric furnace, however, fuel is not used for the production of heat, since this is obtained electrically. Some carbonaceous material must be added to the charge in order to eliminate the oxygen of the ore yielding metallic iron, but the amount of this carbonaceous material can be regulated so as to yield either pure iron, steel or pig-iron at will.

Although this has been realized by the pioneers in the electric smelting of iron ores, certain difficulties in the operation have led them to smelt the ore for the production of pig-iron instead of for the production of steel, although the difference in price of these materials would be sufficient to pay for all the electrical energy needed for the direct production of steel from iron ore, and it is surprising that this more attractive proposition has not gained more attention from metallurgists.

A number of experiments have been made on the direct reduction of steel from iron ore in the electric furnace, but the most satisfactory work that has been accomplished relates to the production of pig-iron frm the ore, and this will be described first. This work has been carried out by Heroult, Keller and others. The furnaces they have adopted are similar to the one employed by Heroult recently in the experiments at Sault Ste. Marie. This consisted of a vertical shaft similar to a small blast-furnace, in which hung a central carbon electrode. The crucible of the furnace was lined with carbon and served as the other electrode, the electric current passing between the hanging electrode and the molten metal in the crucible of the furnace. The ore with fluxes and carbon sufficient for its chemical requirements, was fed in around the vertical electrode, and became heated and melted by the heat produced by the passage of the current. The electric current in this furnace produces enough heat to carry out the chemical reactions involved in the reduction of the ore to metal, and the fusion of the resulting pig-iron and slag. The carbon is required for the reduction of iron oxide to metal, and for the carburization of the metal to form pig-iron.

The Keller furnace is practically the same as the Heroult furnace, except that it consists of two shafts instead of one and that these two shafts are worked in conjunction with one another, the current entering through the vertical electrode in one shaft and leaving by the vertical electrode in the other shaft. A connecting trough or passage enables the electric current to flow from one part of the furnace to the other, and serves to collect the resulting pig-iron and slag from both of the shafts. This furnace has the advantage of using a higher voltage than the single shaft furnace of Heroult. The results of operating furnaces of this class show a consumption of electrical energy of about 0.3 h.p. year and about 800 or 900 lb. of coke or good charcoal per long ton of pig-iron. Supposing that the general costs of operating this furnace and the blast-furnace were equal, these figures would indicate that the electrical furnace would need to obtain energy at a cost per h.p. year of less than that of two tons of coke in order to compete with the blast furnace. Thus, if coke costs $3.00 a ton and electrical energy $5.00 per h.p. year the cost would be about the same by the two processes, and with power at $12.00 per h.p. year, the electric furnace could not compete with the blast furnace unless the price of coke were as high as $7.00 per ton. In considering these figures, it should be remembered that the heating power of one electrical h.p. year is about the same as that of three-quarters of a ton of good coal or coke, assuming that the latter is completely burned. Looked at from this point of view, it will be obvious that even these small and admittedly imperfect electric furnaces are more economical, that is to say, they use the heat better than the large blast furnaces.

Advantages of the Electric Furnace

The electrical furnace possesses certain advantages over the blast furnace, which in some cases may over-ride the high cost of electrical power. One is its ability to use without much trouble ores of a sandy or powdery character. This ability depends upon the absence of a blast in the electrical furnace. In the blast-furnace powdery ores are liable to be blown out of the furnace by the blast, or they obstruct the passage of the blast through the furnace. In the electric furnace there is no blast introduced, and these difficulties are less serious. Another advantage of the electric furnace is in regard to the smelting of titaniferous and other difficultly fusible ores. In the blast-furnace these ores are liable to give trouble on account of the slag becoming pasty, but in the electric furnace it is possible to obtain a higher temperature and thus to overcome any difficulty of this kind. The high temperature which can be obtained in the electric furnace is advantageous in regard to the treatment of sulphurous ores. In the iron blast-furnace, the sulphur contained in the coke or the ore is prevented from entering the pig-iron by the presence of lime and by maintaining strongly reducing conditions in the furnace; the lime then forms calcium sulphide, which passes into the slag. In the electric furnace it is posible to obtain higher temperatures, thus enabling a larger proportion of lime to be used, and even more strongly reducing conditions to be obtained than in the blast-furnace. Large amounts of sulphur can, therefore, be eliminated in the electric furnace, as has been shown in the experiments at Sault Ste. Marie.

Another point in favor of the electric furnace is that it does not require, as the blast-furnace does, a very high quality of coke for fuel. In the blast-furnace a soft or powdery coke becomes crushed and obstructs the action of the furnace, and is less

efficient than a harder variety; but in the electric furnace, where the coke or charcoal is needed merely as a chemical re-agent, any convenient form of carbon can be employed —coke, charcoal or small anthracite—and probably in improved furnaces even such fuel as peat, sawdust or soft coal could be utilized for reduction.

Difficulties yet to be Overcome

Looked at from a commercial point of view, the electric furnace producing pig-iron has many difficulties to overcome before it can compete successfully with the blast-furnace. One very important difficulty is the small scale on which the electric furnace has so far been constructed. It will be seen from the account of the Heroult furnace that the height of the shaft of this furnace is limited by the length of the electrode which is introduced into it. More recent furnaces have been designed by Dr. Haanel and by Mr. Turnbull, in which this difficulty has been overcome by a system of inclined or lateral shafts down which the ore passes, so that the electrode does not hang down the whole height of the ore column. Another weak point in the construction of the electric furnace is that no provision has been made for utilizing the carbonaceous gases which escape at the top of the furnace. In the Turnbull furnace already referred to, it is proposed to utilize the gas by burning it in a rotating tube furnace down which the ore passes before it enters the electric furnace and is mixed with the charcoal. In this way the heat available in this gas will be utilized, and an economy in the working of the furnace may be expected.

In view of the importance of reducing the consumption of fuel and electrical energy to the lowest possible point, the writer has calculated what could be expected in this way if the gases arising from the reaction between the charcoal and the ore were used partly for the reduction of the ore and partly for pre-heating the ore. Such a result could be attained in a furnace consisting essentially of three parts. In the upper part, the otherwise waste gases are burned by air introduced there, and communicate their heat to the incoming ore to which the fluxes but not the charcoal have been added. In the middle portion of the furnace, the gases arising from the lowest portion, which may be considered to be wholly carbon monoxide, react on the heated ferric oxide, if that were the variety of the ore to be treated, and reduces it to ferrous oxide. The charcoal is introduced in the lowest section of the furnace and completes the reduction of the ore to metal. Electrical energy is introduced into this section of the furnace and serves to melt the resulting pig-iron and slag, and to supply the heat necessary for the preceding chemical reaction. The details of the construction of such a furnace have not been worked out at present. In a furnace of this kind it can be calculated that one ton of pig-iron can be obtained from an average ore by the use of 0.2 h.p. year of electrical energy and about 600 to 800 lb. of coke or good charcoal. This includes a reasonable allowance for loss of heat. A further allowance should be made for irregularity in the use of the electrical power, and taking this into account, we may consider that one quarter of a h.p. year and 600 to 800 lb. of coke or charcoal would be required for one long ton of pig-iron from the ore.

Considering these figures, it will be seen that the use of $\frac{1}{4}$ electrical h.p. year will save about $\frac{3}{4}$ of a ton of coke, or that 1 electrical h.p. year should not cost more than $2\frac{3}{4}$ tons of coke, if the electric furnace is to compete with the blast furnace. Thus an electrical h.p. year at $12.00 would correspond to coke at $4.50 a ton. The considerations previously mentioned in regard to the use of cheaper fuel and cheaper ore in the electric furnace would also apply in this case, and with improved design and construction the size of the electric furnace may be increased so as to admit of a large and economical output of pig-iron.

Cost the Dominant Factor

The direct reduction of steel from the ore has been carried out by Stassano and others, but no economical scheme for this purpose has ever been put into operation on a large scale. The Stassano furnace consists of a chamber, about one metre cube, lined with magnesite bricks. The ore, mixed with the necessary fluxes and charcoal for its reduction and made up into briquettes, is placed in this chamber, and is heated by an electric arc which is maintained above the ore. In this furnace it is possible to reduce the ore to metal and to remove any impurities, such as sulphur and phosphorus, although Stassano did not actually demonstrate this as the ores he employed were very pure. The method of heating the ore is, however, uneconomical, and it was not to be expected that commercial results could be obtained. Stassano still experiments with his furnace but no longer uses it for the direct reduction of the ore.

Steel has also been obtained directly from the ore by Dr. Heroult in his electric steel furnace mentioned in the early part of this paper, but he found the process uneconomical, and preferred to use pig and scrap as the materials for making steel in his furnace. Experiments in the laboratory have been made at different times with

a view to the direct reduction of iron ore to steel. In this connection may be mentioned the experiments of Messrs. Brown and Lathe in the metallurgical laboratory at McGill, which were described in the last number of the Institute Journal.[41] These experiments are being continued this year, and the writer hopes to be able to communicate some interesting results at a later date.

In any operation for the direct reduction of iron ore to steel the following difficulties should be borne in mind:—

1. The difficulty of eliminating sulphur when this is present in the ore, the blast-furnace producing pig iron being far more efficient in this particular than a steel furnace such as the open hearth. It may possibly be necessary on this account only to use ores that are relatively free from sulphur in the direct production of steel.

2. Another difficulty lies in the different conditions required for the reduction of the ore and the final refining treatment to which the resulting steel must be subjected. Thus the operation of making steel must always be intermittent in character, while the reduction of ore in the blast furnace is a continuous operation.

Until these and other difficulties have been overcome, it is not likely that we shall have any successful production of steel directly from iron ore on a commercial scale. Nevertheless, the high price of steel as compared with pig-iron renders this proposition particularly attractive to the electro-metallurgist. At present the most satisfactory method appears to be that of reducing the ore to pig-iron in one furnace, and turning this into steel in a separate furnace as in ordinary metallurgical practice.

The Lash Mixture for Making Steel

A company has been formed to exploit the Lash process of making steel, and a description furnished by the company itself shows the essential feature of the process to be a mixture of finely divided iron ore and carbonaceous materials such as coal tar and coke, together with pulverized or granulated pig iron, sawdust and flux, in which iron ore constitutes about 60 per cent. by weight. The claim is made that when charged in the furnace the mixture needs only to be heated to a sufficiently high temperature in order to produce steel. A considerable saving is thus effected as compared with the ordinary method of employing pig iron, either cold or molten, as the chief material of steel. So far the Lash mixture has been used mainly in the open hearth furnace, but it is stated that it can be successfully employed in the electric furnace as well.

Electro Metals Company, Limited

Few people are aware of the fact that the manufacture of ferro-silicon in the electric furnace has been carried on at Welland in the Niagara peninsula for the past year and a half.

The company operating this plant is organized under the presidency of Mr. R. H. Wolff, of New York City; Vice-President, Mr. R. Turnbull, of St. Catharines, Ont., with Mr. Walter Gaston, of New York City, treasurer and general manager. There are also interested in the company, the Societé-Electrometallurgique Francaise of La Praz, France; Dr. P. Heroult also of La Praz, and one of the largest Canadian power companies of Niagara Falls, Ont.

The company own about 40 acres of land south of the town of Welland, with a frontage of over half a mile on the east side of the Welland canal, within easy communication of the Michigan Central, Grand Trunk, Canadian Pacific and Wabash railways. The present works are situated on the north side of the property next to the plant of The Ontario Iron and Steel Company. The works comprise a large steel and corrugated iron building, containing the electric furnaces, stock rooms, crushing plant, etc., a transformer room with tower for the entrance of the high tension wires built against the main building, a repair shop and a separate building containing the electrode plant, where carbon electrodes are made of first class quality by a new process. The offices, stores and laboratory are contained in one building placed at the entrance to the property.

The plant is operated at present for the manufacture of ferro-silicon, and it is expected to start manufacturing ferro-chrome about the beginning of July 1908. The

[41] See Journal of the Canadian Mining Institute, Vol. X.

company is now engaged in building a 400-h.p. electric furnace on a new principle for the smelting of iron ore. This problem will, it is expected, be thoroughly thrashed out at Welland with the assistance of Dr Heroult, and if the experiment proves successful, larger furnaces will be built immediately. The company has other projects in view to be exposed later, which will be of great interest to the electrometallurgical world.

The Electro Metals Company, Limited, was first of all incorporated with the idea of building a large electric furnace for the smelting of iron ores, but some later experience in this work led to a change of view. It was then decided to use the power in the meantime for the making of the ferro-alloys, in the manufacture of which some of the members of the company are experts, and instead of erecting the large furnace for iron ore reduction, a smaller one has been built for experimental purposes. This new furnace, but recently put into operation, is of 400 h.p., and has been constructed on an entirely new principle suggested by the results obtained in Shasta county, California, where Mr. Turnbull conducted a series of experiments on the electric reduction of iron ores in 1906.

This experimental furnace designed for the use of a three-phase current is provided with three electrodes, one corresponding to each phase, which are not embedded in the charge and in fact do not touch it, as the heat is formed by an arc which strikes between the electrodes and the charge. The electrodes are fixed, doing away with the expensive and troublesome regulating apparatus, and also practically eliminating the consumption of electrode, the arc being controlled by special transformers, giving fixed watts, but allowing the volts and amperes to vary as the condition of the furnace may demand. The waste gases can be either used for heating and partial reduction of the charge before it enters the smelting zone, or may be allowed to escape and be collected for other uses. If this furnace proves a success a larger one will immediately be built at Welland with an estimated output of 25 to 30 tons per 24 hours.

The ferro-silicon furnaces of 1,500 to 1,000 h.p. each are four in number, and are constructed after the ordinary type of Heroult furnace. Essentially, they consist of a cylindrical casing of wrought iron about seven feet high, lined with refractory material, a large single electrode hanging vertically into the open top of the furnace. The raw materials are shovelled into the furnace top and packed between the electrode and the refractory lining, the ring of material gradually sinking as its lower end is melted away with the heat formed by the passage of the electric current. The ferro alloy tapped every few hours is allowed to cool in large cakes, then broken up by hammer and packed in small kegs for shipment. From five to eight tons of ferro-silicon are produced daily.

An average analysis of the product is as follows:—

Silicon.	Iron.	Aluminium.	Carbon.	Sulphur.	Phosphorus.
Per cent. 55.0	Per cent. 43.0	Per cent. 1.0	Per cent. 0.160	Per cent. 0 040	Per cent. 0.036

The transformer capacity is at present 6,450 h.p., and is made up as follows:—Six transformers of 1,000 h.p. each and three of 150 h.p. each, all made by the Packard Company of St. Catharines. The transformer and furnace rooms are large enough to hold an installation of 10,000 h.p. capacity, and this available space will be utilized in the near future by the addition of new units.

The development and progress of this company and especially its efforts in the line of electric reduction of iron ores will be watched with much interest by every one familiar with metallurgical work, since it is engaged in attempting to solve a problem of vast importance to this Province, and to the world at large.

The writer wishes to thank Mr. Turnbull for information and kindnesses received during his visit to Welland.

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TWENTY-THIRD ANNUAL REPORT

OF THE

COMMISSIONERS

FOR THE

Queen Victoria Niagara Falls Park

1908.

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO
Printe by L. K. CAMERON, Printer to the King's Most Excellent Majesty
1909

COMMISSIONERS OF THE QUEEN VICTORIA NIAGARA FALLS PARK.

J. W. Langmuir, (Chairman), Toronto.
George H. Wilkes, Brantford.
P. W. Ellis, Toronto.
Colonel L. Clarke Raymond, Welland.
William L. Doran, Niagara Falls.
Lionel H. Clarke, Toronto.

J. H. Jackson, C.E., Superintendent.
J. Harrison Pew, Assistant Superintendent.

Parliament Buildings,
Toronto, February 13th, 1909.

WARWICK BRO'S & RUTTER, Limited, Printers,
TORONTO.

To the Honourable JOHN MORISON GIBSON, K.C., etc., etc., etc.,

Lieutenant-Governor of the Province of Ontario.

May it Please Your Honour:

I beg to submit herewith the Twenty-third Annual Report of the Commissioners for the Queen Victoria Niagara Falls Park, being for the year ended 31st December, 1908, together with the appendices thereunto attached.

I have the honour to be,

Your Honour's most obedient servant,

W. J. HANNA,
Provincial Secretary.

Toronto, February 13th, 1909.

To the Honourable W. J. Hanna, K.C., M.P.P.,

Provincial Secretary, Province of Ontario, Parliament Buildings, Toronto.

Sir,—I have the honour to transmit herewith for presentation to the Legislature of Ontario the Twenty-third Annual Report of the Commissioners of the Queen Victoria Niagara Falls Park (being for the year ended 31st December, 1908), together with the appendices thereunto attached.

I have the honour to be, Sir,

Your obedient servant,

J. W. LANGMUIR,
Chairman.

TWENTY-THIRD ANNUAL REPORT OF THE COMMISSIONERS FOR THE QUEEN VICTORIA NIAGARA FALLS PARK.

To the Honourable JOHN MORISON GIBSON, K.C., LL.D.,

Lieutenant-Governor of the Province of Ontario.

May it Please Your Honour,

The Commissioners for the Queen Victoria Niagara Falls Park, as required by law, beg to submit their twenty-third annual report (being for the year 1908) together with the usual statement of receipts and expenditures. In the appendices attached will be found the Report of the Park Superintendent making reference in detail to the new works constructed and the general work of maintaining the Park proper and its outlying portions from Lake Erie to Lake Ontario during the past year; also the text of contracts entered into during 1908 for the construction of certain sections of the new Boulevard along the Niagara River from the southerly end of the Park to Fort Erie.

Senator Robert Jaffray, who was appointed a Commissioner in 1902, resigned from the Board on the 14th May, 1908, and Mr. Lionel H. Clarke, President of the Board of Trade, Toronto, was, on 24th November, 1908, by Order of the Lieutenant-Governor in Council, appointed in his place; otherwise the personnel of the Commission remains the same as at the date of the last annual report.

Mr. James Wilson, much to the regret of the Commissioners, resigned the Superintendency of the Park on the 6th April, 1908. He was appointed to the position in 1887 and had therefore served for twenty-one years, during which time he performed the very varied and important duties devolving on him to the entire satisfaction of the Commissioners.

With a view to the appointment of a properly qualified successor to Mr. Wilson, the Board considered it advisable to solicit applications for the vacant position through public advertisement. As a result of this action a large number of applications were received, but as none came up to the standard of qualification sought for, the Commissioners appointed Mr. J. H. Jackson, O.L.S., A.M. Can. Soc. C.E., of Niagara Falls, Acting Superintendent until a satisfactory permanent arrangement could be effected. Mr. Jackson having performed the duties pertaining to the position in a very efficient manner his permanent appointment was recommended by the Board and an Order-in-Council dated 27th January, 1909, was passed permanently confirming him in the position of Superintendent.

The chief incidents in the past year's administration of Park affairs may be briefly summarized as follows:—

Permanent Improvements.

The prevalence of spray in close proximity to the Falls rendered it most difficult to maintain in good condition the macadamized roadway at that important point, thus frequently causing much personal discomfort to visitors. It therefore became necessary to construct a brick driveway pavement from a point opposite the northerly end of the Administration

Building extending in front of the Falls to the extreme southerly point of view of the Horse Shoe cataract about a quarter of a mile in length. Occasion was taken during the progress of this work to reduce the grades and more suitably arrange the elevation of the street railway tracks, as well as to provide suitable slopes for the grass plots at this celebrated view point.

The condition of the road leading to the main northerly entrance to the Park has long been in a very unsatisfactory state, which was much more apparent since the construction of the new Clifton Hotel. In order to remedy this a joint arrangement was arrived at, after protracted negotiations, with the City of Niagara Falls and the International Railway for the construction of a permanent roadway of a class suited to the surroundings of this important point. This improved thoroughfare commences with the ordinary width at the Clifton Bridge and increases as it nears the Park entrance. Through the completion of this work the approaches to the Park now present a finished appearance in keeping with the fine granite columns and other surroundings at the gateway. There is yet, however, to be built by the electric railway under its agreement with the Park Commissioners a new walk from the Clifton Bridge to the Park entrance.

Boulevard from Fort Erie to the Park.

At the last session of the Legislature the Commissioners received authority to issue $100,000 debentures, the proceeds of which are "to be applied by the Commissioners primarily towards the preservation of the bank of the Niagara River between Fort Erie and the southerly boundary of the Park proper against erosion, wash or other action by nature affecting or which may affect the same, and the construction of an esplanade on and along the said bank for public purposes, and of such width as may be determined, and for the purchase of such land as may ge necessary or the acquisition thereof by expropriation."

This Act of the Legislature having been supplemented by an Order of the Lieutenant-Governor in Council, the Board was enabled to deal actively with the long delayed project of constructing a boulevard from Bridgeburg to the southerly boundary of the Park proper. The Commissioners have for many years given much thought to the various methods of giving effect in the most comprehensive way to this important work. To this end they have kept steadily before them that, in the expenditure of these public funds, the very best results, both from the standpoint of public utility and scenic effect, should be obtained.

In previous reports it has been stated that what is known as the Chain Reserve, extending from Lake Erie to Lake Ontario—a distance of about thirty miles—is vested in the Park Commission, and although, at the present time it is intended only to construct the Boulevard from Fort Erie to the Park proper—about sixteen miles, it is designed ultimately to extend it from Lake to Lake.

It may safely be asserted that in no part of the American continent is there better or more varied scope for the construction of a well designed Boulevard in combination with a series of Parks extending along the banks of one of the great rivers of the world than is presented in this project. Commencing at the foot of Lake Erie and following the sinuosities of the shore at an altitude sufficiently high to give a continued and comprehensive view of the Niagara River and the opposite American shore until the Rapids immediately above the Falls come in full view; then through the grand Park in sight of the turbulent rapids until the great cataract of Niagara Falls is

reached, and continuing along the banks of the lower river with its wonderful panorama of gorge, rapids, whirlpool and magnificent banks until the rushing and turbulent river merges with the quiet waters of Lake Ontario. Given these fine panoramic views, together with the grand historical associations connected with the whole territory from Lake to Lake, it may safely be said that the proposed boulevard with the continued series of Parks will not, when completed, be excelled on the continent of America.

In order to give effect to the views of the Commission, and after a most careful examination of the shore line of the river, the Honourable the Minister of Public Works was requested to place the services of Mr. A. W. Campbell, C.E., Deputy Minister of Public Works, (who has given special attention to the construction of "goods roads" and to works of this character) at the disposal of the Commission for the purpose of preparing the necessary plans and specifications for the construction of the roadbed. It was decided that sufficient land should be purchased from the various owners to give a general width of 100 feet to the boulevard so as to provide for a macadam driveway of 18 feet in width with grass and shrubs on the river side and trees and foot paths on the western side, with ample space for an electric railway, right of way and foot paths adjoining the properties of the bordering owners, as well as provision for a telephone pole line. In order to break the monotony that might result from too closely following a typical section, it is provided that the projecting areas will be treated in the plans and general design in a manner best suited to the respective sections having regard to the size of the areas and prominency of each on the river bank.

The land purchases are now being proceeded with, and a considerable portion has been taken possession of. It is expected that by spring at least one-half of the right of way will have been bought and ready for road building and general treatment.

It was thought advisable for construction purposes to divide the boulevard into sections and when the specifications were completed about the middle of the year, tenders were at once received for the construction of two sections of the road (full particulars of which will be found in the appendices attached). When the spring opens it is fully expected that a large portion of the road between Bridgeburg and the Chippawa River will be under contract. It is the intention of the Commission to have the roadway completed and ready for use before commencing the planting of trees and shrubs and the laying out of grass plots.

The bridge work spanning the stream along the course has been planned and one of suitable design has been completed over Frenchman's Creek at Bridgeburg.

With the responsibility placed on the commission for the care and management of the park-way along the river front it will become necessary to harmonize the adjacent surroundings with the park-way itself. To that end it will be obvious that it is vitally important that the full control of the water front should be placed under the supervision of the Commission. When it is considered that with the increased use of electrical power in the Niagara Peninsula important industries will be located in close proximity to the river and such industries will require docking privileges on the water and entrance to the land on the west of the boulevard, the placing of the water front under the care of the Park Commission becomes the more necessary. For these reasons the Government has been requested to vest in the Commission not less than 200 feet of the foreshore between Bridgeburg and the head of the Park.

Fire Protection.

For the safety of the general offices, the administration and other buildings, an independent high pressure fire service has been installed with the necessary equipment, which stands ready for instant use in the event of a fire breaking out. This precaution was justified in the summer, when a small fire occurred in the kitchen of the administration building, but which was extinguished without serious loss.

Park Lighting.

The question of lighting the Park has been under the consideration of the Commissioners for a long time, but the great cost of the requisite initial plant, as well as the annual charge for maintenance prevented the Board from entering on the work. Negotiations, however, were opened during the year with the Electric Railway Company for the use of their trolley poles and an arrangement has also been completed for furnishing electric light at a reasonable rate. These arrangements will enable the Park to be sufficiently lighted along the sidewalk on the cliff, as well as the roadway to the west between the entrance gate at the Clifton House and beyond the Falls.

Skating Rink.

Representations were made to the Commissioners during the year that, owing to the difficulty and danger of using any portion of the river for skating purposes, it would be a great benefit to the residents in the locality if an open skating rink was permitted to be placed in the bow of the river below Clark Hill. The request of the petitioners was granted, so that there are now facilities for skating in winter and bathing in summer.

Queenston Heights.

The Park surrounding Brock's Monument has been visited this year by a much larger number, both of travellers from a distance and single day picnic parties from Toronto and adjacent places, than in previous years. The presence of large crowds in this beautiful and picturesque Park has demonstrated the fact that the existing conveniences are quite inadequate for the comfort and enjoyment of visitors. The main entrance to the Park is congested by the slightest increase over normal traffic, and the water supply facilities cannot meet the demands made on them during many days of the season, while the capacity of the restaurant building is entirely insufficient to meet the requirements of visitors. To overcome these serious deficiencies, it is proposed to take down the handsome cut stone columns, comprising the old Lodge entrance to Queenston Heights and to reconstruct them at the entrance immediately opposite the electric railway landing, and, at the same time, to widen the foot path at the entrance and lessen the grade in its ascent to the Monument. It is also proposed to increase the area of the picnic grounds and open new vistas on the brow of the hill, so that the picturesque scenery in the foot lands and in the valley, as well as the placid river, may be seen. Should the popularity of this resort continue to increase it may become necessary to erect a commodious structure for a "Rest" for visitors, somewhat after the style of the Administration Build-

ing in the Park proper, where refreshments and meals can be served; meantime, until the numbers frequenting this Park justify the expenditures indicated, the present frame restaurant building will require to be enlarged and improved to meet the present demands.

Niagara Glen.

Another work of a permanent character which the Commissioners purpose taking up during the current year is the improvement of the Niagara Glen in conjunction with Whirlpool Point. Owing to the difficulty of ascent and descent at the Glen this unique property with its unrivalled and primitive wildness has not attained the popularity which it so justly deserves. Negotiations were commenced some time ago for the construction of an elevator at Whirlpool Point with a path leading to and connecting with the paths of Niagara Glen, as well as the construction of an elevator at the northerly end of that Park. It is intended to revive these negotiations during the present year and if they are successfully concluded it will become necessary to erect a suitable waiting room of the boulder style adopted by the Commissioners both at Niagara Glen and Whirlpool Point for the accommodation and comfort of visitors.

Water Mains.

The need of moisture at the northerly and southerly portions of the Park proper has been seriously felt during extremely dry weather and has frequently proved destructive of grass and plant life. To remedy this serious defect and, at the same time, to provide an ample supply of water for laying the dust of the roadways, it is proposed to instal during the year a system of water mains at different points throughout the Park limits. Experiments have been conducted in the past for dust laying, but so far, in addition to being very expensive, have not proved as successful as was hoped for.

General Maintenance.

The ordinary works of maintenance, both in Niagara Falls Park proper, as well as the outlying Parks, have been well kept up during the year. Practically the whole area of the Park proper has ben restored to its condition prior to the breaking up of the grounds for Power Company's operations and considerable work has been done in the construction of new roads and the repair and upkeep of the older ones, and many trees and shrubs have been planted in the restored portions. The largely increased area of the Park system generally, with the constantly increasing acreage brought under cultivation and horticultural treatment, must necessarily increase the expenditure for the proper care of lawns, paths and driveways.

Designs and Plans for General Park System.

Now that the Park domain has become so extensive, and seeing that additions will, undoubtedly, be made to it from time to time and in fact that it is destined to take rank among the most famed Parks of the world, it is of vital importance that the services of a skilled landscape architect of

the very highest standing in that profession should be secured for the preparation of the most comprehensive designs, specifications and working plans for the decorative treatment of the whole Park territory from Lake Ontario to Lake Erie. Each Park in the system, as well as the various sections of the boulevard, will require distinctive designs in order to produce the best scenic effects not only in each individual park but throughout the whole system. It will be obvious that such results can only be accomplished through the employment of the services of a professional landscape architect who has devised and carried to completion works of a similar character. The preparation of such designs not only require a general knowledge of every branch of landscape architecture, but a thorough practical knowledge of forestry, horticulture and every feature in plant life.

The Commissioners think that this great Park and boulevard system should not only be used for the recreation and enjoyment of the public, but should also be utilized during its formative period, and for all time to come, as a Provincial School of Practical Forestry, Horticulture, Floriculture and Botany, and last, but not least, an object lesson in good road building.

Power Measurement.

Reference ws made in the last Annual Report to the differences of opinion that existed between the Commissioners and the Power Companies as to the method of measuring the excess power "generated and used and sold or disposed of" over the stipulated quantity for which a fixed annual rental is paid by each Company respectively.

The Power Companies interested desired to be heard on the subject in order that they might place before the Commissioners their views in respect to the construction of the clause defining the rentals to be paid for such excess power. A conference was, therefore, arranged for and took place on February 13th at the Clifton House, Niagara Falls, before the Hon. J. J. Foy, K.C., Attorney General for Ontario, and the Hon. John S. Hendrie, M.P.P., when the views of the legal representatives of the respective companies were heard, as well as the reply of Counsel for the Commission. The whole proceedings, as reported verbatim, will be found in the appendix hereto attached.

Withdrawal of Water from River for Power Purposes.

A conference took place in Ottawa in the early part of the year between some members of the Ontario Government and the Dominion Government for the purpose of discussing the terms and conditions of a proposed treaty with the United States with a view to placing a limitation on the amount of water that might be withdrawn from both shores of the Niagara River for commercial purposes and incidentally to determine the amount of water that could be used by the respective Power Companies without materially deteriorating the beauty of the Falls. As the Commission had collected a great deal of information on the subject and the probable effect such withdrawal of water might have on the grandeur and scenic beauty of the Falls, the information thus obtained was placed in the possession of the Government. A monograph by Dr. Wm. Spencer on this subject had been published by the Geological Survey of Canada and the Ontario Government thought it most desirable to have the statements and deductions made by Dr. Spencer examined into by an expert engineer. Mr. Isham Randolph,

an eminent hydraulic engineer, was, therefore, engaged to examine and report upon the questions raised by Dr. Spencer as to the effect of the power developments at Niagara Falls upon the Falls themselves.

The full text of Mr. Randolph's reports will be found in the appendix.

Financial Statements.

From an examination of the financial statements appended it will be seen that the receipts of the year are about the same as for the preceding twelve months. It was expected that the various Power Companies operating under charters from the Ontario Government would have disposed of a larger amount of power in excess of the stipulated amount that each Company is authorized to take in consideration of the payment of their fixed rentals, aggregating $60,000, but this expectation was not realized. Doubtless considerably increased sums will be received during the current year from the sale of excess power from all of these companies.

The payments made by these companies on account of excess power have been accepted without prejudice to either party and subject to the decision of the Courts in the actions now pending. Should the decision be favorable to the contention of the Commissioners the receipts will be augmented by a considerable amount.

The expenditures for the year on Capital Account within the Park proper were largely increased by the construction of a permanent brick pavement at a point overlooking the Falls. This work has already been referred to under the heading of "Permanent Works."

It will be observed that the expenditures connected with the Niagara River Boulevard during the year amounted to $39,322.69 which along with $22,554.96 expended in previous years makes a total expenditure of $61,877.65 on the new boulevard. These large expenditures have caused an overdraft in the Bank Account of $73,722.50 of which $61,877.65, as above stated, was expended in connection with the boulevard. When the $100,000 new issue of debentures have been sold this overdraft will be repaid.

The Comissioners made preparation for suitably entertaining Lord Roberts during his visit to Canada to attend the Quebec Tercentary Celebration but the programme was not carried out owing to Lord Robert's illness and hastened return to England. In September Lord Milner and party spent two days at the Falls as guests of the Commissioners and were taken over the power works and to the historic and scenic points of the frontier. In September also the Canadian Mining Institute with visitors from Great Britain and the Continent were shown the interesting features of industrial Niagara on both sides of the River.

All which is respectfully submitted.

J. W. Langmuir,
Chairman.
George H. Wilkes.
P. W. Ellis.
L. Clarke Raymond.
William L. Doran.
Lionel A. Clarke.

QUEEN VICTORIA NIAGARA FALLS PARK.

Financial Statement, 1908.

Receipts.

Ontario Power Company, rental	$30,000 00	
Ontario Power Company, excess rental	88 50	
Canadian Niagara Power Company, rental	15,000 00	
Canadian Niagara Power Company, excess rental	18,624 15	
Electrical Development Company, rental	15,000 00	
International Railway Company, rental	10,000 00	
Zybach & Company, rental	9,000 00	
Brock's Monument tolls	1,001 50	
Wharf privileges	501 00	
Sundries	760 40	
		$99,975 55
Overdraft in Imperial Bank, December 31st, 1908		$73,722 50
		$173,698 05

Special Account.

For maintaining water levels at intakes of Canadian Niagara Power Company and the International Railway Company.

January 31, 1903, deposited	$25,000 00	
December 30, 1905, interest to date	2,288 41	
		$27,288 41
Less cost of submerged dam		$2,189 32
		$25,099 09
December 31, 1908, interest accrued to date		$2,344 58
		$27,443 67

Financial Statement, 1908.

Expenditures.

Paid Imperial Bank overdraft, January 1st, 1908		$24,212 12
Capital Account:		
Wages, permanent works:		
New roads	$2,516 88	
Permanent works	2,439 01	
Trees and shrubs	1,640 78	
Fire protection	613 72	
Niagara Glen	192 45	
Butler's Burying Ground	101 15	
Bridge Street shelter	50 00	
		$7,553 99

Expenditures.—Continued.

Materials, permanent works:

New roads	$2,194 59	
Fire protection	990 34	
Trees and shrubs	439 39	
Iron pipe fence	409 50	
Water lots	375 55	
Butler's Burying Ground	217 74	
Niagara Glen	59 21	
Queenston	40 49	
Bridge Street shelter	20 40	
Furnishings	19 25	
Fort Erie	7 50	
		$4,773 96

Niagara River Boulevard:

Roadway construction	$17,200 11	
Lands purchased	10,160 11	
Stone riprap	7,647 69	
Bridges	4,314 78	
		$39,322 69

Land purchases (Queenston)	$1,030 20	
Legal	1,902 06	
Brick pavement, complete	27,109 22	
		$81,692 06

Maintenance Account:

Salaries paid staff, including constables, gardeners, etc.	$14,353 88	
Wages, labourers and teamsters	17,413 25	
Materials	7,198 97	
Office expenses	653 23	
Commissioners' expenses	1,162 38	
Miscellaneous	1,002 93	
		$41,784 64
Paid interest on bonds, including bank charges		$24,168 24
Paid interest on overdraft		1,840 99
		$173,698 05

APPENDIX A.

Report of the Park Superintendent.

To the Commissioners of the Queen Victoria Niagara Falls Park.

Gentlemen,—I have the honour to submit the following report of work undertaken and performed during the year 1908 in maintaining and improving the Queen Victoria Niagara Falls Park with its outlying portions northerly to Lake Ontario and southerly to Lake Erie, under the supervision of Mr. James Wilson until May 1st and under my control since June 13th.

General.

In addition to the ordinary routine of maintaining the Park system efficiently and providing for the needs and comfort of the throngs who come from far and near to gaze upon nature in her supreme effort, a step forward has been taken this year in commencing the construction of the interconnecting links between the outlying parks and the Park proper, that will, when completed, form a continuous parkway for 20 miles above the Falls and eventually for the same distance below the Falls.

Niagara Falls Park.

The area of the Park proper to be maintained and cultivated to a high degree of perfection has been increased yearly since the completion of the first installation of the various power companies until the close of the season 1908 sees the whole of the original area of 150 acres requiring attention in the repair and upkeep of paths and roadways together with the green plots and shrubs.

During the year much attention has been given to the roadways in this portion of the park vacated by the companies and partially restored at the end of 1907. The main carriage drive from the Power House of the Canadian Niagara Power Company to the head of Dufferin Islands has ben re-surfaced equal to the other park driveways and is in constant use for vehicular traffic. The secluded drive around the "Elbow" at Dufferin Islands has been repaired and newly surfaced with stone, adding an extra half mile of pleasant water scenery accessible to carriage traffic.

Small connecting links of roadway macadam construction have been built between the Power House of the Park and River Railway Company and the Canadian Niagara Power Company leaving one main drive yet to be constructed between the former Power House and the Park green houses and near the base of the bluff.

The planting of trees and shrubs in the Park area under the process of restoration has been attended with more encouraging results from mulching the soil with manure and very little of the stock has been lost this last season.

The changes and new arrangements detailed at length in the Report of 1907, providing for more suitable quarters to carry on the police system of the Park both at the north end and the south end have resulted in a better arrangement of the force and a more complete patrol of the park limits. Very little disorderly conduct has been reported and with the exception of several detentions for minor offences only two arrests have been made during the year. One person committed suicide by shooting during the season.

A most regrettable accident occurred on the morning of July 29th when Isaac Beswick, an employee of the regular Park staff, met his death opposite Rambler's Rest Shelter, being struck by a bridge car of the International Railway. The unfortunate man appeared not to hear the approach of the car though the gong was sounded.

On the morning of July 6th a small fire was discovered in the kitchen of the Administration Building. Fortunately it was seen in time to prevent serious loss, the automatic extinguishers being used. This circumstance was made the occasion of thoroughly instructing the regular police staff in the use of the new fire fighting apparatus which was not quite complete at this time. All the valves were explained and the operation of the hydrants tested by actual practice as an object lesson.

The question of ordering material and payment of accounts has been revised to completely follow each transaction through by correspondence on file, and new books have been arranged to show the progress of expenditure during the year so that the actual state of each appropriation can be seen without referring to each detail of cost.

Unfortunately estimates of the numbers of visitors daily are not recorded so that a comparison with former years cannot be made, but it would appear that this year the total number is slightly under the average. The 15th September marked one of the maximum crowds when the Niagara district turned out to the demonstration to Sir Wilfred Laurier.

New Works.

The report for 1907 set forth three important permanent improvements that it was proposed to take up as early as was practicable. These works together with the installation of a high pressure water supply for fire protection have all been carried out, the system of Park lighting being the only measure not actually completed, and it is partially in service now.

Brick Pavement. The roadway along the edge of the cliff from the Administration Building to and above the Horseshoe, formerly of macadam construction, has been entirely removed and constructed of standard brick pavement, a total distance of 1700 feet with a circular drive at the southerly end where vehicles tend to become crowded in the busy summer season. This work consisted of an excavation 12 inches in depth below the finished grade which was at a lower elevation than the old roadway, to form the subgrade. This subgrade was compacted by rolling to form a solid and sufficiently hard surface to receive the concrete foundation for the brick work. Concrete 6½ inches thick was used for the foundation and upon this a sand cushion 1½ inches in thickness after compacting was uniformly laid to receive the paving brick 4 inches thick.

When the concrete was sufficiently hard the brick surface was rolled to an even surface of required form and the whole grouted with portland cement grout and left to set hard for traffic. At the edges and at equal spacing longitudinally were laid pitch joints of elastic nature to take care of the expansion and contraction at different seasons of the year. The sides of the roadway throughout are curbed with a limestone curb set in concrete and drainage is provided for by catch basins at intervals along the length of the roadway. The brick for this work were purchased from New Cumberland, West Virginia, and consist of a yellow fire clay block repressed vitrified forming a roadway of very clean and pleasing appearance.

The large carriage traffic has not been slow to appreciate this much needed improvement and express itself by a large increase in the vehicles passing over this road.

Owing to the very severe conditions of spray and the anxiety to provide against any possibility of defective work it was deemed advisable to perform the contract by day's labour. The result shows that the cost is practically the same as the lowest tender and the cost of inspection is much reduced, while the foundation is thicker by half an inch than the specifications originally called for.

Several changes in the adjacent paths and green plots were made necessary during the paving construction. The grade of the International Railway tracks at the Administration Building has been lowered by a foot and the gravel platform made to conform as also were the foot paths leading from it. The small green plot at the Horseshoe has been removed entirely and the roadway located along the edge of the concrete walk.

Park Lighting. The lighting of the Park was taken up actively at the first of the year and after much correspondence and comparisons of design a contract was entered into with the International Railway for the installation of a system of incandescent lights along their right of way using the iron poles to support the brackets and hoods containing the lights. The system extends from the main entrance of the Park to the upper limit of Duffering Islands with two brackets of three lights each on every iron pole. The cables (lead covered) are all placed in iron conduits with junction boxes at the foot of the poles and from these are lead up the poles by iron conduit pipe to the semi-circular bracket supporting the hood. The lighting apparatus presents a very neat and substantial appearance and situate as it is between the main drive and the foot path in many places gives light to as great an area as possible. Power for the current is supplied from the International Railway power house as part of the contract entered into.

Park Approach. Negotiations were entered into with the City of Niagara Falls and the International Railway which resulted in the construction of a new and very much wider approach to the Main Park entrance the Upper Steel Arch Bridge. The construction is of the macadam type and at a much higher elevation than formerly and sets off to better advantage the new granite gateways. The International Railway tracks were raised to conform with the new grade and by agreement the Company will next year build a new concrete walk along the edge of the cliff from the Bridge to the Clifton Incline similar to that laid by the City on the westerly side of the River Road.

Fire Mains. The laying of a high pressure main with hydrants for fire protection at the Administration Building under contract to the Ontario Power Company was completed early in the year and there are now erected ready for use three fire hydrants in close proximity to the Commissioners Offices. Hose and the necessary fire fighting apparatus has been purchased to adequately protect the structures at this point.

Maid of the Mist Company. With the expiration of the lease of privileges by the Commission to the Maid of the Mist Company in April of this year an arrangement was made with them as part of the renewal to build a concrete retaining wall for the purpose of enclosing the eddy immediately southerly of their landing stage on the Niagara River.

This space had been an eye sore for some time it being the lodging place for decaying matter which became offensive in hot weather.

City Water Works. Advantage was taken of the request from the City of Niagara Falls to increase their pumping plant inside the park limits to require a complete repairing of the Station so as to present an appearance more in keeping with the surroundings. The building has been added to

and new roofed, and it is now proposed to construct a driveway around it to connect with the new pavement. With the completion of the improvements this vicinity will present itself as less out of harmony with its nearness to the great cataract.

Skating Rink. It will be endeavored this winter to maintain an open air skating rink at the smooth water behind Dufferin Islands where the swimming pond is in the summer season. Large numbers of the City young people will spend the afternoon there, if good ice can be kept.

It was thought advisable last year to recommend the deepening of this swimming pond to secure sufficient depth for diving, but it has been found that the pond is frequented very largely by children and their mothers and it would seem the better policy to have this an absolutely safe bathing ground for the little ones.

Queenston.

This outlying park is becoming more popular as a single day picnic ground for various organizations from Toronto and other places that can reach it readily and on a number of days this summer more people have had to be looked after at Queenston than at the park proper. And it appears probable that this popularity will increase rather than decrease within the next few years. With this in view it appears to me that careful consideration should be given to improving the grounds and affording the necessary facilities for the convenience and comfort of the crowds. As it is there are no better provisions now than several years ago, although the conditions are vastly different. Considerable expense would be incurred but it is a matter that should be met even to the extent of foregoing some of the improvements at the Park at the Falls.

Niagara Glen.

The usual works of maintenance have been performed at this point this year. The older shelters have been repaired and new roofs built, while the main stairs have been reconstructed.

Fort Erie.

No work other than that of careing for the property has been carried out at Fort Erie. The grounds have been kept in good condition and visitors shown over the old ruins.

Butler's Burying Ground.

The spot known as Butler's Burying Ground at Niagara, whose care was placed under the Commission, has been partially fenced and arrangements are being made for a right of way to the grounds from the highway.

Niagara River Boulevard.

In the month of April, active work in preparing for the construction of the Boulevard along the upper Niagara River from the Falls to Fort Erie, was begun, when a complete survey of the length, sixteen miles, was made. Upon carefully considering the plan prepared it was decided to purchase extra width of property to make a full allowance of 100 feet upon which to build a macadam roadway, paths and grass plots, with space for

a double track electric railway and a small right of way for telephone lines. The good roads department of the Government was consulted as to the proposed layout and under Mr. A. W. Campbell, Deputy Minister of Public Works, a typical plan was prepared with specifications for road construction. Surveys were then commenced to show the quantity of land to be secured from each owner along the route and information prepared for proceeding with the purchase. This work is now complete and negotiations are in progress with the owners following a general policy outlined by the Board of Commissioners after careful discussion. Some of the extra width has been bought and turned over to the Commission and it is intended to have the whole complete by next spring.

The typical plan shows a green plot 15 feet in width adjoining the edge of the bank followed by a roadway 30 feet wide, of which 18 feet is stoned after the manner of macadam roadways. Bordering upon the roadway 25 feet is left for a path and two rows of trees; then 20 feet is reserved for electric railway purposes and the remaining 10 feet is for a pole line for telephone use. Where projections occur in the contour of the shore line, extra width has been taken so that these may be beautified and relieve any monotony from the sameness of employing the typical section throughout.

For construction purposes the work has been divided into sections and as the land has been arranged for, these have been thrown open for tender and contracts awarded. Section No. 1, a length of one and one-quarter miles above Chippawa, has the roadway completed under the specification prepared, and is in use, while section No. 4 two and three-quarter miles long has been commenced at the Bridgeburg end of the route. Much care has been given to the proper interpretation of the requirements for building to produce a surface that will be satisfactory under the traffic that will pass over it, and special attention has been exercised upon the drainage of the gutters.

Simultaneously with the opening of sections of roadway for travel the problem of maintenance must be thought of. This can be best accomplished with the mileage under control by a division into sections after the manner of a railway trackage and keeping at intervals materials for repair work and quarters for the road men.

Outlets from the larger ditches are provided by constructing reinforced concrete culverts, while the larger streams are bridged by steel concrete bridges of a design in keeping with the character of the work. One of these, a forty foot span, is completed at Frenchman's Creek near Bridgeburg and presents a fine appearance with its cut stone hand rails, and retaining walls of hand laid dry walls holding up the approaches.

The protection of the shore line from erosion by cutting from the river currents has been vigorously carried on and practically all of the lengths originally outlined have been lined with stone riprap laid up along the water's edge. More of this stone work will be required in the future as the currents change and commence to wear away in a new place. It would be advisable to examine the whole frontage and lay out for protection such portions as require it most.

All of which is respectfully submitted.

John H. Jackson,
Superintendent

QUEEN VICTORIA NIAGARA FALLS PARK.

Contract for the Construction of the Niagara River Boulevard,

Section No. 1.

This agreement made (in triplicate) this 11th day of August, A.D. 1908, by and between The Queen Victoria Niagara Falls Park Commission, of the first part, and The Queenston Quarry Company (E. D. Lowrey, President), of the Village of St. David's, and T. E. Ferris, of the City of Niagara Falls, both in the Province of Ontario, Contractors, of the second part.

Witnesseth:—

1. That the said party of the first part has let and awarded to the Contractors, and in consideration of the covenants and agreements herein contained on the part of the Contractors to be kept and performed by them, does hereby let and award to the said Contractors the following described work or contract, upon the following terms and conditions and specifications, hereunto annexed, and in accordance with the plans thereof on file in the office of the Commission at Niagara Falls, all of which form a part of this contract.

2. The work to be done, and the materials to be furnished under this contract, are described as being the construction of Section No. 1 of the Niagara Boulevard, a distance of 6,460 lineal feet.

3. And the said Contractors, in consideration of the letting and awarding to them of the said contract and work, and in consideration of the payments hereinafter mentioned, to be made to them by the said Commission, and under the penalty expressed in a bond bearing even date with the presents and hereunto annexed, hereby agree at their own proper cost and expense to do all the work, furnish all the material above set forth, according to the true intent and meaning of the specifications and conditions herein contained.

4. And do further agree that the said Commission shall be and are hereby authorized to appoint an engineer of the said Boulevard, and such assistants and inspectors as they may deem proper, to inspect the work to be done under this agreement and to see that the same strictly corresponds with the specifications hereunto annexed.

5. To prevent all disputes and litigation, it is further agreed by and between the parties to this contract that the Engineer of the said Boulevard shall in all cases determine the amounts of quality of work to be done and which are to be paid for under this contract or in connection with said Boulevard construction, and he shall decide all questions which may arise relative to the execution of the contract, or to said construction on the part of the Contractors, and his estimates, directions and decisions shall be final and conclusive and binding upon the said Contractors.

6. It is understood that whatever conditions and specifications are mentioned herein, the conditions and specifications hereunto annexed are referred to, and the same are to be taken as a part of this contract and construed therewith.

7. And it is further agreed that this contract shall be executed in triplicate, one of which triplicates shall be kept by the said Commission, one to be kept by the said Engineer, and one to be delivered to the Contractors.

8. And the said Contractors hereby agree to receive the following prices as full compensation for the use of forms, tools, patterns, plant, implements and machinery, including all transportation, etc., for the same, and for all the labor for executing all the work contemplated in this contract; for all bailing, draining and pumping of water; for all loss or damage arising out of the work aforesaid, or from the action of the elements or from any unforeseen destruction or difficulties which may be encountered in the prosecution of the same, and for all risk of every description connected with the work, also for all expenses incurred by or in consequence of the suspension or discontinuance of the said works (in case the Engineer should so direct) and for well and faithfully completing the work and the whole thereof in the manner and according to the plans and specifications and the requirements of the Engineer under them; being distinctly understood that there shall be no claim for any extra work except as herein specially provided for; also the furnishing (including transportation) of all the materials necessary for the full completion of the work; and the keeping of the works in repair, and in good working order, until the final payments are made, the whole of the work to be completed according to the plans and specifications for the lump sum of ten thousand five hundred and twenty-two dollars ($10,522), and further agree to any combination of the following additions and deductions per item to or from the work shown on the plan and described in clause 2 of this contract, namely:

The addition or deduction of:

1. Earth excavation, including disposal, 30 cents per cubic yard.
2. Macadam roadway complete, $2.20 per square yard.
3. Furnishing and laying 4-inch tile drain, 20 cents per lineal foot.

9. The work embraced in this contract shall be begun within three days after notice so to do shall have been given to the Contractors by the Engineer, and carried on regularly and uninterruptedly thereafter with such a force as to secure its full completion on or before October 10th, 1908, and such portions thereof shall be completed in each month as the Engineer shall determine is a fair proportion thereof.

10. And the said parties of the second part hereby further agree that the said party of the first part shall be and is hereby authorized to deduct and retain out of the moneys which may be due or become due to the said party of the second part under this agreement as damages for the non-completion of the work aforesaid within the time hereinbefore stipulated for its completion, or within such further time as in accordance with the provisions of this agreement shall be fixed or allowed for such performance or completion, the sum of one hundred dollars ($100) per day for each and every day the time employed upon the said work may exceed the time stipulated for its completion or such stipulated time as the same may be increased as hereinbefore provided which said sum of one hundred dollars per day is hereby in view of the difficulty of estimating such damages agreed upon fixed and determined by the parties hereto as the liquidated damages that the party of the first part will suffer by reason of such default and not by way of penalty.

11. That party of the first part reserves the right of suspending the whole or any part of the work herein contracted to be done if it is deemed to be for the best interests of the Commission so to do, without compensation to the Contractors for such suspension other than extending the time for completing the work as long a time as it may have been delayed by such suspension.

12. No charge shall be made by the Contractors for hinderance or delay from any cause during the progress of the work embraced in this contract.

13. The said Contractors further agree that they will give personal attention constantly to the faithful prosecution of the work and will not assign or sublet the work or any part thereof or any of the moneys or orders payable under the contract without the previous written consent of the Commission, but will keep the same under their personal control; that no right under this contract nor to any orders or moneys due or to become due hereunder shall be asserted against the said Commission or any members or officers thereof, by reason of any so-called assignment in law or equity of this contract or any part thereof, or of any moneys or orders payable thereunder, unless such assignment shall have been authorized by the written consent of the Commission; that no person other than the parties signing this agreement as the Contractors hereby now have any claim hereunder; that no claim shall be made except under a specific clause of this agreement by any person whatever.

14. In the event of the contractors failing or neglecting for one month to pay the wages of the men and teams employed on the works the Commission, on the representation of the Engineer, reserve to themselves the right to pay all such wages ascertained to be due and to deduct the amount of the same from any monies due or coming due to the Contractors upon this or any other contract.

15. It shall be lawful for the said Commission in case the said Contractors shall fail in the due performance of any part of their undertaking or shall become bankrupt or insolvent or shall compound with their creditors or propose any composition with their creditors for the settlement of their debts, or shall carry on or propose to carry on their business under inspectors on behalf of their creditors, or shall commit any act of bankruptcy, to relet the undertaking of said contract or any part thereof, and upon such condition as it may think fit, or from time to time may engage workmen and provide all such materials, implements and apparatus and employ the same in such manner as the said Engineer may think necessary and proper for completing the said works, or any part of them, and any loss, damage, or deficiency that may arise in consequence of said bankruptcy or failure on part of the contractors shall be paid and deducted out of the money retained by said Commission out of any work previously performed by said Contractors, and should said money so retained be not sufficient to indemnify and cover such losses, the deficiency then due shall be a charge on the bond accompanying this instrument.

16. If the said Contractors are not, in the opinion of the Engineer, proceeding with the work expeditiously, continuously and in accordance with the terms of this contract, and to the satisfaction of the said Engineer, and so as to ensure in his opinion a satisfactory completion and delivery to the Commission by the date herein provided, and should the Engineer so certify to the Commission in writing the said Commission shall thereupon require the said Contractors to proceed without delay with such force as may be directed, and in case of their refusal or neglect to completely comply with such requirement within three days after being notified so to do, the said Commission may take possession of and complete said work at the expense of said Contractor as herein provided in case of failure or insolvency.

17. The Contractor shall deliver to the Engineer accounts for extra work duly ordered in the manner hereinbefore mentioned and provided in specifications signed by himself or agent, and such accounts will be paid in

full within five weeks upon the Engineer's certificate for their correctness, and no claim whatever will be considered for works not so included in such account. Such payments on extra work shall not be construed, however, as an acceptance of any such work, and shall not lessen the liability of the Contractors to replace defective work though the conditions of the same may not have been known to the Engineer at the time his certificate was given or acted upon.

18. In order to enable the Contractors to prosecute the work advantageously the Engineer shall on or about the last Saturday of each month make an estimate in writing of the amount of work done and materials delivered to be used in the work, and the value thereof according to the terms of this contract. The first such estimate shall be of the amount or quantity and value of the work done and materials delivered since the Contractors commenced the performance of this contract on their part. And every subsequent estimate, except the final one, shall be of the amount or quantity and value of the work done since the last preceding estimate was made. And such estimates of the amount and quantity shall not be required to be made by strict measurement, or with exactness, but they may, at the option of the Engineer, be approximate only. And upon such estimate being made the Commission will pay to the Contractors eighty (80) per cent. of such estimated value.

19. The Contractors hereby further agree to make all the needed repairs in the said work during a period of nine months after its final completion; and they hereby further agree that the Commission is authorized to retain out of the monies payable or to become payable to them, under this agreement, the sum of five per cent. on the amount of the contract, and to expend the same, or so much thereof as may be required, in making the aforesaid repairs to the satisfaction of the Engineer, if after the delivery or mailing of a notice in writing to the Contractors or their agent, they shall neglect to make the aforesaid needed repairs within the time specified in such notice; and they (the Contractors) hereby further agree to be responsible for any accident that may occur on account of the defective condition of the work.

20. It is further mutually agreed, that whenever this contract, in the opinion of the Engineer, shall be completely performed on the part of the Contractors, the Engineer shall proceed with all reasonable diligence to measure up the work, if need be, and shall make out the final estimate for the same, and shall certify the same; and upon the expiration of sixty (60) days after the acceptance by the Commission of the work herein agreed to be done by the Contractors, the said Commission will pay to the said Contractors the amount remaining, after deducting from the amount or value named in the last mentioned (final) certificate, all such sums as shall previously have been paid to the said Contractor under any of the provisions of the contract, and also such sums of money as by the terms they are authorized to reserve or retain, provided that nothing herein contained shall be construed to affect the right hereby reserved by the said Commission to reject the whole or any portion of the aforesaid work should the said certificate be found or known to be inconsistent with the terms of this agreement, or otherwise improperly given.

21. And it is hereby agreed that the said Contractors shall indemnify and save harmless the Commission from and against all claims against the said Commission for all labor done and materials furnished under this contract, and shall furnish said Commission with satisfactory evidence, when requested, that all persons who have done work or furnished materials under

this contract, for which the Commission might become liable, have been fully paid, or satisfactorily secured; and in case such evidence is not furnished an amount necessary and sufficient to meet the claims of persons aforesaid shall be retained from money due the said Contractors under this contract, until the liabilities aforesaid shall be fully discharged or satisfactorily secured.

22. And the Contractors agree that they will execute and deliver to the said Commission a bond by an approved surety company in the sum of five thousand dollars ($5,000) for the faithful performance of the contract, conditioned to indemnify and save harmless the said Commission from all suits or actions of every name and description brought against the said Commission, for or on account of any damages received or sustained by any party or parties, by or from the said Contractors, their servants or agents, in the construction of the said works, or by or in consequence of any negligence in guarding the same, or any improper material furnished by the Contractors used in its construction, or by or on account of any act or omission of the said Contractors, and that the Contractors will faithfully perform this contract according to the true intent and meaning thereof; and the said Contractors hereby further agree that so much of the money due to them under and by virtue of this agreement as shall be considered necessary by the said Commission, may be retained by the Commission until all such suits or claims for damages, as aforesaid, shall have been settled, and evidence to that effect furnished to the satisfaction of the said Commission.

23. This agreement shall ensure to the benefit of and be binding upon the successors and assigns of the Commission and the heirs, executors, administrators and assigns of the said Contractors as well as upon the Commission and Contractors.

In witness whereof, the parties to these presents have hereunto set their hands and seals, the day and year herein first written.

Signed, sealed, and delivered,
In the presence of
W. S. Malcolmson.

Queen Victoria Niagara Falls Park Commissioners.
P. W. Ellis,
Acting Chairman.
(Seal)

Queenston Quarry Company, Limited.
Per E. D. Lowrey,
President.
(Seal)
F. E. Ferris.

QUEEN VICTORIA NIAGARA FALLS PARK.

Contract for the Construction of the Niagara River Boulevard, Section No. 4.

This agreement made (in triplicate) this nineteenth day of September, A.D. 1908, by and between The Queen Victoria Niagara Falls Park Commission, of the first part, and William Upper, of the City of St. Catharines, and Charles Lobb, of the City of St. Catharines, both in the Province of Ontario, Contractors, of the second part.

Witnesseth:—

1. That the said party of the first part has let and awarded to the Contractors, and in consideration of the covenants and agreements herein contained on the part of the Contractors to be kept and performed by them does hereby let and award to the said Contractors, the following described work or contract, upon the following terms and conditions and specifications, hereunto annexed, and in accordance with the plans thereof on file in the office of the Commission, at Niagara Falls, all of which form a part of this contract.

2. The work to be done, and the materials to be furnished under this contract, are described as being the construction of Section No. 4 of the Niagara River Boulevard, a distance of 14,200 lineal feet.

3. And the said Contractors, in consideration of the letting and awarding to them of the said contract and work, and in consideration of the payments hereinafter mentioned, to be made to them by the said Commission, and under the penalty expressed in a bond bearing even date with the presents and hereunto annexed, hereby agree at their own proper cost and expense to do all the work, furnish all the material above set forth, according to the true intent and meaning of the specifications and conditions herein contained.

4. And do further agree that the said Commission shall be and are hereby authorized to appoint an Engineer of the said Boulevard, and such assistants and inspectors as they may deem proper to inspect the work to be done under this agreement and to see that the same strictly corresponds with the specifications hereunto annexed.

5. To prevent all disputes and litigation, it is further agreed by and between the parties to this contract that the Engineer of the said Boulevard shall in all cases determine the amounts or quality of work to be done and which are to be paid for under this contract or in connection with said Boulevard construction, and he shall decide all questions which may arise relative to the execution of the contract, or to said construction on the part of the Contractors, and his estimates, directions and decisions shall be final and conclusive and binding upon the said Contractors.

6. It is understood that whatever conditions and specifications are mentioned herein, the conditions and specifications hereunto annexed are referred to, and the same are to be taken as a part of this contract and construed therewith.

7. And it is further agreed that this contract shall be executed in triplicate, one of which triplicates shall be kept by the said Commission, one to be kept by the said Engineer and one to be delivered to the Contractors.

8. And the said Contractors hereby agree to receive the following prices as full compensation for the use of forms, tools, patterns, plant, implements and machinery, including all transportation, etc., for the same, and for all the labor for executing all the work contemplated in this contract; for all bailing, draining and pumping of water; for all loss or damage arising out of the work aforesaid, or from the action of the elements or from any unforeseen destruction or difficulties which may be encountered in the prosecution of the same, and for all risk of every description connected with the work, also for all expenses incurred by or in consequence of the suspension or discontinuance of the said works (in case the Engineer should so direct) and for well and faithfully completing the work and the whole thereof in the manner and according to the plans and specifications and the requirements of the Engineer under them; being distinctly understood that there shall be no claim for any extra work except as herein specially provided for; also the furnishing (including transportation) of all the materials necessary for the full completion of the work; and the keeping of the works in repair, and in good working order, until the final payments are made, the whole of the work to be completed according to the plans and specifications for the lump sum of thirty-two thousand five hundred dollars ($32,500), and further agree to any combination of the following additions and deductions per item to or from the work shown on the plan and described in clause 2 of this contract, namely:

The addition or deduction of:—

(1) Earth excavation, including disposal, 60 cents per cubic yard.
(2) Macadam roadway complete, $1.40 per square yard.
(3) Furnishing and laying 4-inch tile drain, 12 cents per lineal foot.

9. The work embraced in this contract shall be begun within three days after notice so to do shall have been given to the Contractors by the Engineer, and carried on regularly and uninterruptedly thereafter with such a force as to secure its full completion on or before August 15th, 1909, and such portions thereof shall be completed in each month as the Engineer shall determine is a fair proportion thereof.

10. And the said parties of the second part hereby further agree that the said party of the first part shall be and is hereby authorized to deduct and retain out of the monies which may be due or become due to the said party of the second part under this agreement as damages for the non-completion of the work aforesaid within the time hereinbefore stipulated for its completion, or within such further time as in accordance with the provisions of this agreement shall be fixed or allowed for such performance or completion, the sum of one hundred dollars ($100) per day for each and every day the time employed upon the said work may exceed the time stipulated for its completion or such stipulated time as the same may be increased as hereinbefore provided, which said sum of one hundred dollars per day is hereby in view of the difficulty of estimating such damages agreed upon fixed and determined by the parties hereto as the liquidated damages that the party of the first part will suffer by reason of such default and not by way of penalty.

11. That party of the first part reserves the right of suspending the whole or any part of the work herein contracted to be done if it deemed to be for the best interest of the Commission so to do, without compensation to the Contractors for such suspension other than extending the time for completing the work as long a time as it may have been delayed by such suspension.

12. No charge shall be made by the Contractors for hinderance or delay from any cause during the progress of the work embraced in this contract.

13. The said Contractors further agree that they will give personal attention constantly to the faithful prosecution of the work and will not assign or sublet the work or any part thereof or any of the monies or orders payable under the contract without the previous written consent of the Commission, but will keep the same under their personal control; that no right under this contract nor to any orders or monies due or to become due hereunder shall be asserted against the said Commission or any members or officers thereof, by reason of any so called assignment in law or equity of this contract or any part thereof, or of any monies or orders payable thereunder, unless such assignment shall have been authorized by the written consent of the Commission; that no person other than the parties signing this agreement as the Contractors hereby now have any claim hereunder; that no claim shall be made except under a specific clause of this agreement by any person whatever.

14. In the event of the Contractors failing or neglecting for one month to pay the wages of the men and teams employed on the works the Commission, on the representation of the Engineer, reserve to themselves the right to pay all such wages ascertained to be due and to deduct the amount of the same from any monies due or coming due to the Contractors upon this or any other contract.

15. It shall be lawful for the said Commission in case the said Contractors shall fail in the due performance of any part of their undertaking or shall become bankrupt or insolvent or shall compound with their creditors or propose any composition with their creditors for the settlement of their debts, or shall carry on or propose to carry on their business under inspectors on behalf of their creditors, or shall commit any act of bankruptcy, to relet the undertaking of said contract or any part thereof, and upon such condition as it may think fit, or from time to time may engage workmen and provide all such materials, implements and apparatus and employ the same in such manner as the said Engineer may think necessary and proper for completing the said works, or any part of them, and any loss, damage, or deficiency that may arise in consequence of said bankruptcy or failure on part of the Contractors shall be paid and deducted out of the money retained by said Commission out of any work previously performed by said Contractors, and should said money so retained be not sufficient to indemnify and cover such losses the deficiency then due shall be a charge on the bond accompanying this instrument.

16. If the said Contractors are not, in the opinion of the Engineer, proceeding with the work expeditiously, continuously and in accordance with the terms of this contract, and to the satisfaction of the said Engineer, and so as to ensure in his opinion a satisfactory completion and delivery to the Commission by the date herein provided, and should the Engineer so certify to the Commission in writing the said Commission shall thereupon require the said Contractors to proceed without delay with such force as may be directed, and in case of their refusal or neglect to completely comply with such requirement within three days after being notified so to do, the said Commission may take possession of and complete said work at the expense of said Contractor as herein provided in case of failure or insolvency.

17. The Contractor shall deliver to the Engineer accounts for extra work duly ordered in the manner hereinbefore mentioned and provided in specifications signed by himself or agent, and such accounts will be paid in

full within five weeks upon the Engineer's certificate for their correctness, and no claim whatever will be considered for works not so included in such account. Such payments on extra work shall not be construed, however, as an acceptance of any such work, and shall not lessen the liability of the Contractors to replace defective work though the conditions of the same may not have been known to the Engineer at the time his certificate was given or acted upon.

18. In order to enable the Contractor to prosecute the work advantageously the Engineer shall on or about the last Saturday of each month make an estimate in writing of the amount of work done and materials delivered to be used in the work and of the value thereof according to the terms of this contract. The first such estimate shall be of the amount or quantity and value of the work done and materials delivered since the Contractors commenced the performance of this contract on their part. And every subsequent estimate, except the final one, shall be of the amount or quantity and value of the work done since the last preceding estimate was made. And such estimates of the amount and quantity shall not be required to be made by strict measurement, or with exactness, but they may, at the option of the Engineer, be approximate only. And upon such estimate being made the Commission will pay to the Contractors eighty (80) per cent. of such estimated value.

19. The Contractors hereby further agree to make all the needed repairs in the said work during a period of nine months after its final completion; and they hereby further agree that the Commission is authorized to retain out of the monies payable or to become payable to them, under this agreement, the sum of five per cent. on the amount of the contract, and to expend the same, or so much thereof as may be required, in making the aforesaid repairs to the satisfaction of the Engineer, if after the delivery or mailing of a notice in writing to the Contractors or their agent, they shall neglect to make the aforesaid needed repairs within the time specified in such notice; and they (the Contractors) hereby further agree to be responsible for any accident that may occur on account of the defective condition of the work.

20. It is further mutually agreed, that whenever this contract, in the opinion of the Engineer, shall be completely performed on the part of the Contractors, the Engineer shall proceed, with all reasonable diligence, to measure up the work, if need be, and shall make out the final estimate for the same and shall certify the same; and upon the expiration of sixty (60) days after the acceptance by the Commission of the work herein agreed to be done by the Contractors, the said Commission will pay to the said Contractors the amount remaining, after deducting from the amount or value named in the last mentioned (final) certificate, all such sums as shall previously have been paid to the said Contractor under any of the provisions of the contract, and also such sums of money as by the terms they are authorized to reserve or retain, provided that nothing herein contained shall be construed to affect the right hereby reserved by the said Commission to reject the whole or any portion of the aforesaid work should the said certificate be found or known to be inconsistent with the terms of this agreement, or otherwise improperly given.

21. And it is hereby agreed that the said Contractors shall indemnify and save harmless the Commission from and against all claims against the said Commission for all labor done and materials furnished under this contract, and shall furnish said Commission with satisfactory evidence, when requested, that all persons who have done work or furnished materials under

this contract, for which the Commission might become liable, have been fully paid, or satisfactorily secured; and in case such evidence is not furnished an amount necessary and sufficient to meet the claims of persons aforesaid shall be retained from money due the said Contractors under this contract, until the liabilities aforesaid shall be fully discharged or satisfactorily secured.

22. And the Contractors agree that they will execute and deliver to the said Commission, a bond by an approved surety company in the sum of ten thousand dollars $10,000) for the faithful performance of the contract, conditioned to indemnify and save harmless the said Commission from all suits or actions of every name and description brought against the said Commission, for or on account of any damages received or sustained by any party or parties, by or from the said Contractors, their servants or agents, in the construction of the said works, or by or in consequence of any negligence in guarding the same, or any improper materials furnished by the Contractor, used in its construction, or by or on account of any act or omission of the said Contractors, and that the Contractors will faithfully perform this contract according to the true intent and meaning thereof; and the said Contractors hereby further agree that so much of the money due to them under and by virtue of this agreement as shall be considered necessary by the said Commission, may be retained by the said Commission until all such suits or claims for damages, as aforesaid, shall have been settled and evidence to that effect furnished to the satisfaction of the said Commission.

23. This agreement shall ensure to the benefit of and be binding upon the successors and assigns of the Commission and the heirs, executors, administrators and assigns of the said Contractors as well as upon the Commission and Contractors.

In witness whereof, the parties to these presents have hereunto set their hands and seals, the day and year herein first written.

Signed, sealed, and delivered,
In the presence of
W. Hardwick.

The Queen Victoria Niagara Falls Park Commission.

L. Clarke Raymond,
Acting Chairman.
(Seal)

William Upper.
(Seal)

Chas. Lobb.
(Seal)

Memorandum of agreement made in duplicate this 11th day of August, A.D. 1908.

Between The Queen Victoria Niagara Falls Park Commission, hereinafter called "The Commission," of the first part, and H. D. Symmes, of the City of Niagara Falls, Contractor, hereinafter called "The Contractor," of the second part.

Witnesseth:—

That the Contractor, in consideration of the covenants and agreements on the part of the said Commission herein contained, hereby covenants and agrees with the Commission as follows:—

1. That he shall and will for the consideration hereinafter mentioned well and sufficiently execute and perform in a true, perfect and thoroughly workmanlike manner all the works required in the erection and completion of a steel concrete bridge over Frenchman's Creek on the River Road, agreeably to the plans and specifications for said work hereto attached, which said plans and specifications are incorporated as part of this contract, and to the satisfaction and under the direction of the Engineer appointed by the Commission. And will find and provide good, proper and sufficient material of all kinds whatsoever as shall be required for completing and finishing the said bridge, for the lump sum of twenty-nine hundred and seventy-six dollars ($2,976).

2. That he will accept as full payment for extra work as follows: —

(1) Extra concrete, per cubic yard, $10.

(2) Extra earth excavation, per cubic yard, 50 cents.

3. In consideration whereof the Commission covenant and agree with the Contractor to pay the Contractor the sum of twenty-nine hundred and seventy-six dollars ($2,976), such payments to be made on the certificate of the Engineer; eighty (80) per cent. on the completion and acceptance of the structure and the balance within thirty (30) days after its acceptance.

In witness whereof the said parties hereto have duly executed this agreement.

THE QUEEN VICTORIA NIAGARA FALLS PARK COMMISSION.

Signed, sealed, and delivered,
In the presence of
JENNIE F. QUILLINAN.

. (Seal)

L. CLARKE RAYMOND,
Acting Chairman.

H. D. SYMMES.
(Seal)

QUEEN VICTORIA NIAGARA FALLS PARK COMMISSIONERS.

Hearing at the Clifton Hotel, Niagara Falls, February 15th, 1908, before the Honourable J. J. Foy, K.C., Attorney-General for Ontario, Chairman, the Honourable John Hendrie, M.P.P., and the Commissioners of the Queen Victoria Niagara Falls Park, with reference to the system of measurement to be adopted in accounting for the excess power generated by the power companies in the Park.

PRESENT:

Park Commissioners:

J. W. Langmuir, Chairman,
George H. Wilkes,
P. W. Ellis,
Col. L. Clark Raymond, K.C.
William L. Doran,
Sir Æmilius Irving, K.C.,
R. A. Ross, Electrical Engineer,
James Wilson, Superintendent.

Canadian Niagara Power Company:

Wallace Nesbitt, K.C.,
A. Monro Grier, K.C.
P. P. Barton, General Manager.

Ontario Power Company:

Walter Cassels, K.C.,
W. N. Ryerson, Superintendent.

Electrical Development Company:

George Tate Blackstock, K.C.,
W. A. Pearson, Chief Engineer,
D. H. McDougall, Treasurer.

Hon. Mr. FOY: I understand there is some dispute between the Commissioners of the Park and the different electrical development companies as to what is the proper measurement or proper means of ascertaining the rentals to be paid for power. Accounts have been presented by the Commissioners, and I understand that the method adopted by the Commissioners in their computation is disputed, and it was thought, rather than have any litigation, or with a view to avoid litigation, and to bring the matter possibly to a head, that a conference of the different parties interested might be useful in brushing some of the difficulties or objections away, or, if not remove them altogether, at all events boil the matter down a little and bring the dispute within a small compass. I ask Mr. Langmuir to make a few remarks as to the object of this conference and what is intended to be done in it.

Mr. LANGMUIR: Mr. Attorney-General and gentlemen, you are all aware of the existing agreements with the three power companies. Briefly stated, these agreements, so far as the provisions that are to be considered are concerned, are all alike. They provide that for a payment of what I

may call a fixed rental or a certain sum charged, each power company is allowed to manufacture, use and sell or dispose of 10,000 horse power, and after that 10,000 horse power is reached that for the next 10,000 disposed of or manufactured they shall pay $1 per horse power, for a further 10,000 horse power they shall pay 75 cents per horse power, and thereafter 50 cents for each horse power. The quantity generated, sold or disposed of over the first ten thousand we call surplus power.

The Canadian Niagara Power Company and the Eleectrical Development Company have now reached the stage of developing surplus power. When that stage was reached the Commission considered the agreement in that behalf and it was decided that we should employ the services of an electrician, or an electrical expert, to define to us on what terms we would render the bill to the companies for the surplus power. We had his report on the subject, which we referred to our solicitor, Sir Æmilius Irving. Inasmuch as Professor Galbraith's report mentioned three methods under which that measurement and charging might be made, it was the more necessary to refer it to the solicitor, as we did. The solicitor reported to us and gave his opinion as to the method under the agreement that should be adopted. These bills were therefore made out on the terms set out in the opinion of Sir Æmilius Irving.

We thought it advisable, however, before going further, to submit the report of the electrician, and our solicitor's report, to the Attorney-General, which we did, asking his advice on the subject. Ultimately an Order-in-Council was passed adopting the views of our solicitor and authorizing us to render the bills in accordance with the view that he expressed.

These bills in one instance were rendered, and the company took a different view. The view adopted by the Commissioners, and approved of by the Government was that, what is known as the increasing peak power was the plan that should be adopted. I understand that the company to whom the bill was rendered took the ground that it should be the average peak. Therefore this brought us at once into antagonism. We came to an arrangement, however, that we would accept payment on the terms proposed by them, leaving the other method in abeyance, hoping to have had a conference before this time.

This conference is now called, and the Attorney-General is now prepared, I presume, to hear why the bill rendered by the Commission cannot be adopted by the respective power companies.

That is, sir, I think, briefly stated, the position we occupy at the present time.

Hon. Mr. Foy: Well, I will be glad to hear the opinions and views and arguments of those companies that are opposed to the method adopted by the Commission in the bills that have been rendered.

Mr. Blackstock: I suggest the Canadian Niagara Power Company should open the discussion.

Mr. Nesbitt: Mr. Attorney-General and gentlemen, I desire, in the first place, to thank the Commission and the Government for the courtesy they have extended to us, first, in coming to the very sensible and business-like view of taking the rent that everybody admits is due, and, as to that which is in dispute, leaving it to be the subject of a conference; and, secondly, we have to thank the Commission and the Attorney-General for showing us fully the report of Mr. Galbraith, for giving us a copy, so that we can see how far we disagree, if at all, from the conclusions he arrived at, You are all, I presume, familiar with that report.

Now, in the first place, let me mention as a matter of history, shortly, the situation. The company which I represent, the Canadian Niagara Power Company, as you all know, under the original contract made with the Government in 1892, had the exclusive use of the park for the production of power, and for that they were to pay for all time a fixed rental of $25,000 a year. Subsequently a discussion arose between the Commissioners, the Government and ourselves, as to whether the contract was being carried out, and, as the result of that discussion, a suggestion was made for a lowering of the fixed or sleeping rent, as it may be called, the minimum rent which we had to pay in any event, and after that that we should practically allow the Government to share in the profit, if I may so describe it, of the enterprise, in the earnings, we to abandon our exclusive use of the park. That culminated in what I may call the parent agreement for all the companies, the agreement of July, 1899, which was subsequently ratified by legislation; and one clause in that agreeement is the clause that is under discussion. I am reading from the Electrical Development Company's agreement:

> "The said agreement of the 7th of April, 1892, in respect to the amounts of rentals and period for which the same is payable, is hereby amended by providing that from and after the 1st day of May, 1899, the rental payable under the said agreement in lieu of that specified in paragraph 4 thereof shall be up to the first day of May, 1949, the sum of $15,000 per annum—(that is in lieu of the fixed rent of $25,000)—payable half yearly on the same days and times as specified in said paragraph four of said agreement and in addition thereto payment at the rate of the sum of $1 per annum for each electrical horse power generated—(I may say that I understand there is no such thing as what may be called an 'electrical horse power'; its equivalent in the amount of energy which would be equal to one horse power .746 watts)—and sold and used or disposed of over 10,000 electrical horse power up to twenty thousand electrical horse power, and the further payment of the sum of seventy-five cents for each electrical horse power generated and used and sold or disposed of over twenty thousand electrical horse power up to thirty thousand electrical horse power, ande the further payment of the sum of fifty cents for each electrical horse power generated and used and sold or disposed of over thirty thousand electrical horse power; that is to say, by way of example, that on generation and use and sale or disposal of thirty thousand electrical horse power the gross rental should be $32,500 per annum, payable half yearly, and so on in case of further development as above provided, and that such rates shall apply to power supplied or used either in Canada or the United States. Such additional rentals as shall be payable for and from such generation and sale or other disposition as aforesaid to the Commissioners shall be payable half yearly at the rate above specified on the first days of November and May in each year for all power sold in the several half yearly periods from the day of sale; and within ten days after said first days of November and May in each year on which such additional rentals shall be payable respectively, the treasurer, or if no treasurer, the head office of the company shall deliver to the Commissioners a verified statement of the electrical horse power generated and used and sold or disposed of during the preceding half year, and the books of the company shall be open to inspection and examination by the Commissioners or their agent for the purpose of verifying or testing the correctness of such statement, and if any question or dispute arises in respect of such return, or if any statement

delivered at any time by the company to the Commissioners of the quantity or amount of the electrical horse power generated and used or sold or disposed of or of the amount payable for such additional rentals the High Court of Justice of Ontario shall have jurisdiction to hear and determine the same and to enforce the giving of the information required."

That being the situation when the period, as the Chairman of the Commission has stated, arrived when over the ten thousand horse power was produced, a statement was filed by the secretary-treasurer of the company showing the amount which had been "generated, sold, used or disposed of" during the six months following, and it was out of that the dispute arose. Then Mr. Galbraith was sent over, and he crystallized his views on the second page of the report, as follows:

"The agreement seems to leave little or no room for doubt on the following points:

"1. The same system of determining the rental should be used for each company."

In that we entirely concur, because, as you will readily see, Mr. Attorney-General, the contract is the same, that is, leaving out the difference in the amount of fixed rent, and that contract must be construed the same in each case. We concur in number one.

"2. The nature of the company's contracts with its customers, especially the question as to how the power is sold, whether as power, or energy, or current, or combinations of these, should not affect the rental."

We concur in that. I assume we will all agree that the contract between the Government and ourselves must be construed by its terms, and not in reference to anything outside the contract. We could not, by making a distributing contract, add to, or take from, the contract with the Government: it must stand or fall upon its own construction.

"3. The power should be measured at the generator terminals and therefore should include all losses between the generator and the customers. The agreement does not read 'power *transmitted* and used and sold or disposed of.'"

We do not concur, as we understand that statement, in his third conclusion. There are several words used in dealing with the basis for collection of rentals. It is not generated. Generation, of course, must be conceded by everybody to mean the absolute maximum that could be charged. But, in addition to the language used, we submit that you have to read in the other language, which also forms a part of the basis for calculation, namely, "generated, sold, used or disposed of," and that it must therefore mean the power generated, used, sold or disposed of.

Now, you can readily conceive a case where power may be generated and there may be, as there always is, a certain percentage of loss before it is used, sold or disposed of. In that case we say that you have to take that which is the net result of the generation, the use, the sale, or disposition, otherwise you leave out of the contract three very important items in addition to the mere generation. I may say that, so far as the particular company for which I speak is concerned, I believe it is not a matter of very great moment. But that should not alter the construction of the document.

"4. The word 'generated' in the agreement refers to power generated in the company's station and not to power generated elsewhere and transmitted to customers through the company's feeders."

We concur in that.

"5. The words 'used and sold or disposed of' refer to commercial use and disposal.

We concur in that.

"6. No power, whether from direct or alternating current, necessarily used in the company's station, and no power used for experimental purposes in improving and testing the company's plant, are to be included in the power upon which the rental is to be based."

We concur in that, and I think that throws a very lurid light upon the reasonableness of the construction which I have suggested in dealing with clause 3, because, of course, in measuring the power at the generator terminals you would get the losses and the loads used for testing our plant, so it would hardly be suggested it came within the language of the other.

"7. Use and sale or disposal are to be considered as contemporaneous with generation."

Now, I have been unable to follow precisely what Professor Galbraith meant by that. It seems to me in one aspect that we entirely concur. If, however, it is to be read as practically an amplification of clause 3, or an intermingling with the same idea as in clause 3, then we would dissent from that to the extent I have indicated in discussing clause 3.

Then he proceeds a little further on in dealing with what he calls the "fluctuating rental" to make this statement:

"Another method is to use the average of the instantaneous powers generated during the day. This method is naturally connected with the 'flustuating rental' method of computing rental since it is a measure of the electrical energy actually produced during the day and of the water actually used. It is the lowest horse power capable of producing the actual electrical energy of the day and must therefore work for 24 hours."

And a little further on he says:

"On the other hand, it does indicate the total amount of energy produced in the 24 hours, and roughly the quantity of water used."

That is, speaking of the average power.

You will see, therefore, the points on which we differ. I may say that Professor Galbraith gives no indication of his own view of what is the proper construction. He merely amplifies this at considerable length on a matter about which I think there will be no difficulty between ourselves and the Commissioners, that is, as to the proper methods of arriving at the measurement of the power, and, having arrived at that, to say what basis it should be calculated upon. Now I might give you an illustration of the difficulties that exist in relation to that. Let me show you, Mr. Attorney-General, a good illustration of what Mr. Galbraith deals with. Here is a diagram we have obtained by the courtesy of this company, and it is a striking illustration of the difference between peak and average. (Handing diagram to Hon. Mr. Foy.) This marked "average," you see, is the result of taking all the instantaneous powers, the second class, so to speak, during the day and getting the average load, the actual electrical energy disposed of and paid for. This gives you a notion of how at one point in the day the peak runs up. As I understand the contention of the Commissioners, it is that that point must be taken as the basis of the rental, and then, if the next day it went up to a higher point in the next column, that it should be taken from that on, and so on from year to year, and if it went say to the top of the diagram, at any moment of time during the six months, it should never during the whole

of the 50 years go below that. If I am misinterpreting what I understand to be the contention of the Commissioners, it is an error of information. That gives an average load of 19,200 horse power and a peak load of 43,800 horse power. So you will see the extraordinary difference.

Now, let me illustrate it in another way. Take it in exceptional times, not to illustrate the company which I represent, but more particularly that which you are familiar with in Toronto. During Exhibition time, lasting say ten days, there is a call for power to the extent of 50,000 horse power, which lasts from, say half an hour to an hour and an hour and a half. As I understand the Commissioner's contention, that must be taken from that time through the whole six months, although they may not sell more than 10,000 horse power, that 50,000 horse power must be taken at the basis from which the rent must be calculated.

That method, we say, is a wholly visionary method of making the calculation. It entirely leaves out the considerations of use, sale or disposal. It, for instance, as Professor Galbraith indicates, entirely leaves out the consideration of the average load, which practically represents, taken in the rough, the power generated and the water used in the generation of the power. We say, in the first place, how would you make your affidavit that is required? It requires the treasurer to give a verified statement of the electrical horse power—that is, the electrical energy equal to the horse power, because there is not, as I say, such a thing as horse power in electricity—the electrical energy equal to horse power generated and used and sold or disposed of during the preceding half year. Now, how do you get at that? Surely, common sense would say there is only one way to get at that, and that is to take the whole half year, see precisely what quantity you have generated, taking the peak and taking the minimum—that is the antithesis of peak—and see what you have generated, used, sold or disposed of. The language seems to me to be so plain that, but for the statement of the Chairman that a different view had been taken, one could not understand how there could be really a dispute on the subject.

The treasurer of the company has to give an affidavit of the power, that is, the energy, the current generated, used and sold or disposed of during the preceding half year. That must cover the whole part. To get at that, you must take the average throughout and say there has been so much power and divide that by your equivalent of horse power, and say that is the electrical horse power. That, I should have thought, went without saying. By analogy, the whole matter is practically covered in another way. Take the Statute, which my learned friend, Mr. Cassels, will elaborate, where it speaks of the way rentals are to be calculated. How is that to be done? The Statute is perfectly explicit that it has to be done by an apportionment. I merely glance at the Statute—Mr. Cassels will deal with it more fully—but it puts into practical illustration what the meaning of that language is.

Then go back to the earlier part of it. How are you to get at the electrical horse power, that is, the electrical energy generated? What is it you are to pay rent on, the electrical energy generated? That is one thing. As I say, generated covers absolutely the maximum, that covers the utmost, but it is not that which has to be dealt with. It is not only to be generated, but to be used and sold or disposed of, and it has to be calculated from the date of sale—not generation, but from the date of sale. Does not that give an indication at once of what is the meaning of the whole contract? That indicates—of course, I thought it would not be necessary to add that, but perhaps it is better to do so—that indicates it is a fluctuating

matter. You cannot take a fixed point and then say it is to be the basis. Let me illustrate, if the other contention is correct, what would follow. We get a right under our sleeping rent, our fixed rent, to generate up to 10,000 horse power. We generate at one moment of time, say this year, 40,000 horse power; next year, through some breakdown in our works, we generate under the 10,000. Are we to pay for the next 50 years, or that year, on the 40,000 horse power, to continue that, although it has not been sold or used or disposed of in any way, although the contract says it is to be paid from the day of sale? How would you work it out practically?

Take another illustration, which is a common one in England at any rate, and in the United States. A man takes a mine, leases a mine, he leases it at what is called a sleeping rent; that is, the proprietor, the owner, is to receive not less than $5,000 a year, that is certain. After that he has to pay a royalty— a royalty on what, if it is to be calculated on the tonnage from the day of sale? Would it not be on the total tonnage during the six months? Would it be arguable in such a case? How do you differentiate? Take a patent. I lease a patent, I am to pay a fixed or sleeping rent, say of $5,000 a year, and I am to pay on what is produced from day to day from the day of sale. Must not you take the average and find out, if you have to put in, as you always have to, an affidavit at the end of the year, what the result of the year's business is? The royalty is calculated on the total amount, not taking the highest amount payable in any one day and say that has to be the fixed thing during the six months' term.

Now, I do not know there is very much more to be said. Let me give another illustration. Electrical horse power represents so much energy. So, if you wanted to get at the number of books in a room, you would not put them in irregular piles and take the highest, but you would take the various piles and average them. The same thing applies when you want to get at the instantaneous productions of power which are recorded on the instruments: You take those total instantaneous productions throughout the six months to get at the quantity of energy produced. In the same way, by the process suggested, you arrive at the amount of water actually used, distributed over the whole year or half year. Now, payment is in respect of a license to use water during the year or half year based on the amount. Whether you use any or not, you must pay $15,000; that will entitle you to use 10,000 horse power, the equivalent of 10,000 horse power of electrical energy, and above that, after that, you pay for what you use. As I say, there is nothing to be made out of the word "horse power," because it does not mean anything, it simply means the force used to raise 33,000 pounds a distance of a foot in a minute, and it is spread over the half year.

Now, supposing an accountant were put in there, supposing you put your own accountant in, and you say to him, "We want you to tell us from the books of the company, what they have generated, used or sold or disposed of during the year." What would you say to a man who came back and said, "Although I find they have actually generated, sold used or disposed of only 20,000 horse power, yet I find that in one day for a second— because is is instantaneous, not during the whole day even—they used 65,000 horse power. I multiply that by 180, or six times 30, and say, that is the horse power, although the actual fact is the exact opposite. I find from the books what the company generated, sold, used or disposed of was, in fact, not that at all, but one-half of that." What would you say to your accountant? I should suppose you would dismiss him as not giving you the fair result.

In all these matters one is struck by a recent observation of a great English judge. Dealing with matters of inference and the like, he said that when he knew the fact was the exact opposite, he, for his part, protested against being asked to come to the monstrous result that the law said the exact opposite of what he knew to be the fact. I refer to the language, not of the present, but of the last preceding Lord Chancellor in dealing with a somewhat kindred matter.

Mr. CASSELS: Mr. Chairman and Gentlemen,—I appear for the Ontario Power Company. They are not, at present, affected, in that they are not generating beyond their maximum of 20,000 horse power. Nevertheless, the question will come to be an important question perhaps in the future. I have to reiterate what my learned friend, Mr. Nesbitt, has stated of the courtesy of you gentlemen in coming over here, particularly yourself, sir, in coming to this bleak place for the purpose of giving us the benefit of this discussion. I think I may take it for granted, that, having brought us over here, both yourself, Mr. Chairman, and you, gentlemen of the Commission, are here with an open mind. In other words, I assume you have not made up your minds one way or the other, but that you are here ready to receive any suggestions and to act upon any views that commend themselves to your judgment. I think I may take that for granted, otherwise we would not be here at all.

We have not had the pleasure of seeing the opinion of the solicitor. We have had the pleasure of seeing Mr. Galbraith's report. We have come here for the sake of solving, if possible, the doubts and arriving at some conclusion on the construction of this document.

Now, I have very few words to say, but it strikes me there is one point that has to be eliminated from the construction of this agreement, that is the capacity generated, the capacity first indicated when the contracts were made. In other words, the Ontario Power Company that I represent are charged with a rental of $30,000 a year whether they generate or not. What do they charge that $30,000 a year for? It is because they are given the right to draw a certain amount of water to utilize the park in a certain way, and they go on paying that whether they use it or do not use it; so that the capacity has nothing to do with it.

Another point that seems to me is a matter of very great importance is this: The term used is "horse power." Now that means absolutely nothing, except in connection with time. It is like interest. The rate of interest at 5 per cent. practically means nothing, unless you get it in relation to the time. So, if you are making a contract that you would lend $5,000 at the rate of 5 per cent. per annum, there you would have the time limit, which is essential in order to get at the meaning of the word "rate" and at the meaning of what is to be paid. If you only borrowed for three months, you would only pay interest for those three months. And why is that? Because it is at the rate of so much per annum, necessarily meaning that, if it is for a less period than a year, then you are only to pay for the proportionate time. Now, when you come to admit, as must be admitted, that horse power has no meaning unless it has relation to time in some way or other, then you come down to this agreement, and what do you find? You find that, "in addition thereto, payment at the rate of the sum of $1 per annum for each electrical horse power." You must have the words "at the rate," which, as a matter of law, as I will point out in a moment to the Attorney-General, indicates of necessity an average. You have the horse power which becomes explainable when you find that in connection with that you have "at the rate of $1 per annum." There is your horse power per annum. You pay $1

for that horse power per annum; and you get then a definite meaning annexed to the word horse power. Then you have "at the rate of." Well, if it is only used for three months, are you to pay for the year? That is, apparently, the contention, if it were seriously contended for. Then, moreover, you pay at the rate of, and when it comes down to the rental, "Such additional rental as shall be payable for such generation and sale or other disposition as aforesaid to the Commissioners shall be payable half yearly at the rate above specified on the first days of April and October in each year for all the power sold in the said several half yearly periods from the day of sale." What is the meaning of the words, "from the day of sale?" If at any period during the six months your peak has run up to 10,000 horse power over and above the minimum, and that 10,000 horse power has only been used for one day, what a senseless thing it is to provide that the day of sale is to be a factor. But when you take that it is payable at the rate of a dollar per annum, and that it is to run from the day of sale, then you get the analogy of the interest I mentioned, then you get some logical and reasonable construction of these documents.

I would not have thought, and nobody has stated that Sir Æmilius Irving has given a different reading of that point, but, if he has, I would like him to reconsider it, because it does seem to me to be an impossibility to take that document, to put the proper meaning on the word "horse power," to point out that it is only rateable, namely, proportionate, that the year is the fixed limit and the day of sale is the time from which it is to govern, and then to argue that the peak at any given time during the six months is to control, and control for all time.

Now the statute in regard to rental, which is the revised statute. What it says in regard to rent is:—

> "Rents shall include rent service, rent charge, rent seck and all periodical payments or renderings in lieu of or in the nature of rent."

This extra dollar, on whatever basis it is charged, is expressly made rent by the terms of the agreement. It forms part of the rent and comes exactly within the definition of this statute. What does the statute say?

> "All rents, annuities, dividends and other periodical payments in the nature of income, ... shall, like interest on money lent, be considered as accruing from day to day, and shall be apportionable in respect of time accordingly."

There is the statute of our own Legislature, and there is the principle that our own Legislature has enacted. It is the same as the rate on money—I do not wish to repeat what I said before, and I would submit that it is almost too plain to be discussed.

Then a good deal of stress has been given to the word "rate." The statute is "at the rate." Now there are authorities in England for the proposition, that where the words " at the rate of" are not in the particular contract the amount is not apportionable. For instance—these are cases more particularly where it provides for the payment of fees of Directors—one case was, "The Board shall be entitled to receive by way of remuneration in each year £5,000." It was argued on one side that the remuneration was only payable for the complete year; it was argued on the other side that it meant at the rate of. Mr. Justice Cozens-Hardy, a very able Judge, puts it this way:

> "Plaintiff contended that Lord Norris was entitled to a one-sixth share at the rate of £5,000 a year. I hold that article 81 does not give remuneration at the rate of, but only provides that the board shall be paid—and so on—

drawing that distinction. In another case Mr. Justice Wright, also a very able Judge, expressed himself in this way—it was argued for the applicants that on the true construction of the article the directors were to receive the remuneration at the rate of, and that the amounts were therefore apportionable:

> "If, instead of £150 and £100 per annum, the words had been 'at the rate of £150 and £100,' I suppose there would be no question that the sums would be apportioned, I ought to say, but I think I have no doubt on the subject."

That is a very eminent Judge. Now here we have, not merely, as I pointed out, the words "at the rate of," but we have it absolutely essential, if I am rightly informed, that in order to define horse power at all you must define time, and the definition is given for the year, and the payment to be made is "at the rate of" for the year. Surely, what is contemplated and what is intended is that fair play should be done all round. We are not liable for the maximum generated, not liable unless it is used or sold, or otherwise disposed of. That is the test. Then, when you come above the 20,000 horse power you have got to get at the average of the six months, and if that is the only point there is at issue between the various companies, it seems to me on consideration that can easily be got rid of.

Mr. Blackstock: Mr. Attorney-General and Gentlemen,—I appear for the Electrical Development Company, and I should like to associate myself with the expressions of gratitude that my learned friends have mentioned at your conceding us this opportunity of putting before the Commissioners and yourself the views of the company with reference to this method of computation. I should also like to say that I hope on the terms of the contract entered into between ourselves and the Commissioners, we shall be saved the scandal of not being able to come to an agreement respecting its terms, or rather, respecting its meaning, because there is no question of fact involved, without going to some tribunal outside ourselves in assisting us to reach a conclusion on that point.

The statements which have been made and the arguments adduced by my learned friends, Mr. Nesbitt and Mr. Cassels, relieve me of the necessity of saying more than a word, because I fully concur in all that has been said by them. Now, may I emphasize a point referred to by Mr. Cassels in another connection, because it seems to me to furnish the key to the whole of the discussion in which we are concerned. Does anybody dispute that what we are to pay for is per horse power that has been used for one year, does anybody dispute that proposition? I understand not. Well then, if that is so, let me put a concrete case. I take the case, which I understand exists on the opposite side of the river where one enterprise takes 25,000 horse power continuously, night and day, during the entire year. Now, suppose that were the only customer which the power company had, and suppose that for three months, during some period of particular stress, it were necessary to supplement that by another 10,000 horse power, which that customer said it would take for three months: Does anybody pretend that under such a contract you could charge in respect to that 10,000, used for three months, the same price as you could charge if it had been used for 12 months? I think the bare statement of the proposition carries with it its own refutation.

Now, coming to the question we are considering, the clause is in this language. After stating the fixed rental of $15,000 as what we have to pay, the contract proceeds.—

"And the further payment of the sum of 75 cents for each electrical horse power generated and used and sold or disposed of over 20,000 electrical horse power up to 30,000, and in addition thereto payment at the rate of the sum of $1 per annum for each electrical horse power generated and used."

At the rate of $1 per annum. That is to say, the user of the horse power has got to be throughout a year, otherwise the method of computation does not arise, except later on there is provision for doing it after six months; that is, the payments are to be made at the expiration of six months. So until you have the user for the period provided by the contract the liability does not arise; the contract in terms says, it has to be used for that period in order that the liability may arise.

Suppose you have a steady user throughout the year, day and night, now of 10,000 horse power. Upon that, it is perfectly obvious that you have got to pay; that horse power has been generated, used and sold throughout the year. There is no dispute about it, and we are all agreed, it is the common case of us all, that in respect of that 10,000 horse power you have got to pay for it in accordance with the terms of the contract. Now, above that level line of 10,000 horse power, according to certain exigencies that would, during the use of that steady volume, arise, this fluctuation happens, 5 minutes to-day, 30 minutes next week, a month hence 45 minutes, and so on. Now, as to all the horse power used in those fluctuations, what you have to do, if you carry out that contract, is to take each one of those horse powers and say, that horse power was there for five minutes, the other horse power for half an hour, and so on, and keep an account in respect of each one of those horse powers, until you get to a point where the total use of the particular horse power extended over a year before the liability under the contract would arise. Let me illustrate that by a perfectly concrete example. You are now providing for a competition of power, a competition between the companies, a suggested competition between us and other companies, like the Electric Power Company, other companies that may be started and are projected, and, again, a suggested competition with the Government itself. Now then, supposing all our customers are taken away to-morrow, is it to be said that once having run up to a peak of 50,000 horse power, without a solitary power being generated, without a solitary power being used, without a solitary power being either sold or disposed of, still you are liable under this contract for 50,000 horse power a year? A statement of it again, I say, carries its own refutation upon it. It does not mean that, and it was not intended to mean that.

Now what did this mean, Mr. Chairman? What it meant was, that every time you take a horse power and use it for a year, then a liability comes to pay for that horse power so used for a year. The difficulty in this case arises, not from any inability to discover what it is that you have to pay for—there is no obscurity about that—that is perfectly plain—the practical difficulty arises, Mr. Attorney-General, in respect of the method by which you are to arrive at a payment which is perfectly clear. The practical difficuly is in keeping an account of these horse powers. There is where you have the practical difficulty in saying what is that method by which we may determine most accurately the period over which the horse power has been used. In respect to that, I understand that there is no difference of opinion, I understand we are all agreed that the only way in which you can do this is by the average system. Let me take this, for instance, as an illustration, Mr. Attorney-General, of the incongruities of the situation. (Exhibits diagram to Chairman.) Now, here is an actual period of six

months from November 1st, 1906, to April 30th, 1907, here is an actual diagram in practice. These are the peaks. You will observe that on a certain date the peak, under some extreme exigency, rose for less than one hour apparently to this high point. According to the suggested interpretation of this contract, and the scheme upon which we are to pay, a line is to be drawn from that point right across here over this blank area. The bill has been rendered to us with a line drawn right across here. All this area in here represents power that has never been sold, never been generated, never been used, nobody has got a dollar out of it, and yet it is said, because at one time, for a few seconds, half an hour, a day, if you like to put it so, it ran up to that peak, it has to be considered as though it steadily stayed there and all this blank area has to be paid for as though it were a full area. That is the argument that is seriously advanced in opposition to the one upon which the power companies rely.

Now, when you come to compare that system with the average system, why, the result is simply this: One is a system by which with absolute precision you state what has been generated, used, sold or disposed of under the contract, it meets the requirements of the contract with absolute precision; the other is an arbitrary, artificial, insincere and untrue representation which absolutely disregards the contract and prevents the common understanding of all the parties from being reached. It seems to me that the moment you arrive at that point, then there is an end of this controversy.

The question we have to deal with is not a question of what the obligations of the companies are. That is plain. It is to take a horse power and use it for a year, and in respect of that to pay for that horse power a dollar. If you use it for less than a year, you pay the proportion of a dollar. If you use it three months you pay 25 cents, if you use it six months you pay 50 cents, if you use it nine months you pay 75 cents, and if you use it all the year you pay a dollar. That is all there is about it.

Now the whole practical question which you have got to decide is, What is the convenient, and not only the convenient, but the absolutely correct, method of arriving at what the number of horse power used is? Upon that we fully concur with the statement of Mr. Galbraith in his report, and in respect to that he says:—

> "Another method is to use the average of the instantaneous powers generated during the day—(which is what we are recommending)—this method is naturally connected with the 'fluctuating rental' method of computing rental, since it is a measure of the electrical energy actually produced during the day and of the water actually used."

Now, I apprehend that what we are all trying to get at is, what our obligation to pay rests upon, and he says:—"This method is naturally connected with the 'fluctuating rental' method of computing rental, since it is a measure of the electrical energy actually produced during the day and of the water used," He continues:—

> "It is the lowest horse power capable of producing the actual electrical energy of the day and must therefore work 24 hours."

We agree with this statement. It is the only practical method of determining the amount, which we are all agreed upon is what we have to pay for, and by that method we are willing to be bound.

I cannot think that the subject is involved in the slightest obscurity. I never had, I think, less difficulty in delimiting the frontiers of rival obligations between parties than is furnished by this contract. It is plain and explicit. And, of course, when you pass from the letter of the contract to the spirit of it, it becomes doubly so. What was it? It was, as was

incidentlly referred to by my learned friend, Mr. Nesbitt, that is, you went forward leasing horse power for a year to people and getting a yearly rental from them; which means that nobody is going to pay a year's rental to a company for a momentary user. Let me illustrate it this way. Supposing we were seriously saying to a purchaser that for all time to come, if the peak happened to run up under some sudden strain to an enormous increase upon what he was actually taking, that for all time to come he was to be kept at that point under his obligation. It would be said at once it was a monstrous proposition. Nobody would think it was a fair way of determining the rights of the parties. Now, so it is here. The intention was that where we used a horse power for a year and made it available for the purpose of making money, that upon that yearly rental to somebody else we should pay the Commissioners a dollar ourselves in respect of it for that year. That is what that means, and this contract and the report of Professor Galbraith, taken together with our concurrence in the remarks he makes in the description he gives of the averaging system, point out, not only the practical way of measuring the obligation, but also the only equitable one.

Hon. Mr. Fox: Are there any other companies who wish to be heard? As there do not appear to be any, I will ask Sir Æmilius Irving to speak on this argument.

Sir Æmilius Irving: Mr. Chairman and Gentlemen:—In the first place the principal point, and the point that I wish to put before you emphatically is, that all my learned friends have said in no way alter, change, weaken or permit me to say that I have overlooked anything so far as my opinion is concerned. They draw attention to a paragraph here in which Professor Galbraith says that the agreement gives no indication whatever of the way in which the matter is to be paid for. Of course, Professor Galbraith is a man of position, and everything that he says is entitled to very great respect, but I disagree with Professor Galbraith, as I would not turn to him for the construction of a written agreement. When he comes to speak of the different details and means of working, of course that is far beyond my criticism, for I have to lean to his knowledge of his especial profession. In speaking of the method to be adopted in computing the rental from a given list of daily powers, he states:—

> "One view which may reasonably be taken is that the rental in its variable stage is to increase step by step with the development of the plant." (Now, we are on the proper course to discuss the construction). "In order to indicate the stage of development at any time some criterion must be specified."

This obligation is not to pay upon the power generated from day to day, but to pay upon the capacity, upon the development of the plant. The suggestion that has been made that one day it might rise up to some monstrous height and from that he argued that it is to be calculated at that point, is true in so far as the height to which it can go; but the height to which it can go cannot honestly be beyond the capacity of the plant measured by the contract rights that they have to take water. They have not got an indefinite right to take any quantity of power that they may choose. They are to take water according to the specifications of certain works, which it is to be assumed they have built up to, and which are specified in the contract in detail, and what that may be, 100,000 or perhaps more, is the maximum that they can possibly be called upon to pay, because they cannot manufacture any more; and it is to gauge what they have plant enough for, not to follow them from day to day with pen and ink and find out what they have done to-day and what they are going to do to-morrow. It is this: You are not

to develop at once 10,000 horse power, you have got a plant, or you are permitted to construct a plant, which will develop very much more. If you develop more you shall pay according to that scale that is spoken of; but so soon as you increase your plant to the ability to develop, that fixes your additional rental.

"Thus the expenditure of a given amount of money or the fulfilling the conditions of a mechanical test might have indicated the time and amount of increased rental. It is possible to assume that the actual generation of electrical power for commercial purposes is the criterion of development adopted and is made a part of the agreement for no other purpose than to mark the stage of development. With this assumption the rental is to increase within the terms of the agreement on the day on which the power generated becomes greater than that generated on any previous day, and is to be based on this increased power until the day on which a greater power shall be generated, and so on." (There is Professor Galbraith's explanation of what he means by what is somewhere termed the peak power.) "No falling off in the power generated on any of the intermediate days will affect the rental. Thus the rental will increase from time to time, even from day to day, with increasing generation of power for commercial purposes, but cannot decrease. Decrease and stoppage of output, accidents aside, depend upon the business of the company and not on the stage of development. For convenience of reference this method will be quoted as that of 'increasing rental.'"

That is measured on the stage of development. That, I think, answers the points my learned friends so elaborately paid attention to.

The criticism upon the language of the agreement that it is to be "generation, sale, use or output"—that is not the right word—

Hon. Mr. Foy: Disposal.

Sir Æmilius Irving: Disposal; that does not signify whatever. In conveyancing any agreement in respect of what the connection of words is can be availed of to further the point that is under discussion. It is not under discussion unless there are other corroborative matters to take away the principal feature of the agreement, and to say, "Well, by another word it would be somewhat less." It does not enter into that, I respectfully submit.

There was one other point that my learned friends introduced with reference to a statute. I suppose that that means terms for construction or interpretation in the Landlord and Tenant Act or some Real Property Act. I would like to ask if that is what is meant. What statute did you mean?

Mr. Cassels: The Landlord and Tenant Act.

Sir Æmilius Irving: Oh yes. But then that does not take and alter what is the construction of this particular contract or the way the words are used in this particular contract. You say it is rental. I think it is rental: but it is rental under the definitions to which both parties have subscribed in that paper. It is not rental in respect of the Landlord and Tenant Act. It is not drawn in pursuance of that Act. It is drawn in reference to the common law style of drawing a document, and must speak for itself.

Those are the three points is seems to me that my learned friends made a good deal of, all that was capable of being elaborated they elaborated, but, as I have stated before, it made no impression upon me, in no way

cutting down the construction which has to be put upon the agreement, which is that the only system to be applied has to be the criterion that marks the stage of development. It is that that they are called upon to pay.

Supposing they are going to have 10,000 horse power by such a time. As they increase, they are to pay, and there is an expression in the agreement, which my learned friends necessarily were not bound to draw attention to—and in addition to anything which we may generate, the further sum,—therefore showing that this further sum is part and parcel of the same scheme of return to the landlord as applied to the original dead rent. We are going to develop 10,000 horse power and have it ready by such a day; as we develop more, we have to pay for more; and that rule has to be applied to ascertain what is the progressive stage of development, and not anything with reference to averages or any other manipulation—I do not use it in a bad sense—any other arrangement of figures.

Mr. Blackstock: Sir Æmilius, may I ask you, just for the sake of clearness, as to the expression in Professor Galbraith's report to which you allude, the principle assessing the extra payment against us as capacity is developed in the plant? If I correctly appreciate both the observations in that report and the remarks by which you have amplified and explained that principle, I understand that to go to the length of saying that if we once illustrate in practice that we have a certain capacity, from that time forward we are bound to pay the rental which such a capacity indicates, no matter whether we were to shut down our works and generate and use no power at all.

Sir Æmilius Irving: Reach—you say illustrate in practice—reach by development, I think, is nearer the point.

Mr. Blackstock: Yes.

Sir Æmilius Irving: Then, what I say is, that when you reach that point, from that day—not prior, of course,—from that day in that current half-year you begin at the higher rate. If it is so ruinous to you, what did your clients do when they signed the agreement? They put in a stipulation that they could retire and give up the lease altogether. That is a very important thing for a body who may in a judicial capacity discuss it. You have the same option as in the case of a mine. It is frequently the case that the working of a mine becomes so unremunerative that the lease becomes oppressive, and then the lessee is not bound by the contract. One of you gentlemen spoke in effect that you were bound hand and foot. Well, give up the place.

Mr. Blackstock: I appreciate the point, and the only observation I am going to make in connection with it is this: I understand the position that is taken now, that once having shown by practice that we have the power to develop, our plant has advanced to that point, where, as you say, a certain development is evinced, that from that time forward we are bound by that exhibition of capacity. Then, what I point out is, with all deference, I do not think it is possible to work out this contract upon that conception. For this very obvious reason, that the contract makes the basis of payment originally the verified statement of the treasurer or secretary of the organization for six months. Now, what does that mean? It means there may be a difference in one six months from what there is in another six months; and if it is fixed and absolute by reason of the exhibition of power upon a particular occasion, there is an end of any necessity for an affidavit or verified account every six months, unless, indeed, in some other six months it went up again. If, so far as the true power is concerned, it is to

be according to the peak that on some occasion was reached, if that is to determine the matter, why, of course, the contract calling for a verified account for every six months or so is wholly inoperative. That clause of the contract plainly points to fluctuation. The meaning of it is, that one six months you may use a low horse power, and the next six months an exceptionally high horse power, and the following six months an exceptionally low power again.

Sir ÆMILIUS IRVING: Never; because the argument you are answering, and I put forward, is, you can never go back. All that you have to give a statement for is that you have not exceeded what you did before; and the officer of the Commission—it is not your statement alone—the officer of the Commission has a right to go in and examine.

Mr. BLACKSTOCK: I understand the argument of Sir Æmilius to be, that once having reached that peak, it is impossible for us ever to send in an account of which we charge ourselves with a lower sum.

Sir ÆMILIUS IRVING: Certainly.

Hon. Mr. FOY: Or is it only confined to the six months? Would it go on for ever?

Sir ÆMILIUS IRVING: It would go on for ever, if they never exceeded that six months. If on the first of January, or whatever the date is, they had generated so many horse power, then if in the next following half year they have never gone above that, it remains at what that is.

Hon. Mr. FOY: Suppose they only generated in the following six months one-half of what they did in the preceding six months, would that still go on?

Sir ÆMILIUS IRVING: Certainly; because their machinery and plant could develop that if they chose.

Hon. Mr. FOY: These diagrams of the companys' and so on indicate what is used, not what is generated.

Sir ÆMILIUS: No; that is what is generated.

Mr. GRIER: Generated, used and sold. The dotted line is the daily peak and the stronger line is the daily average.

Sir ÆMILIUS IRVING: That is their construction of it.

Mr. GRIER: No; this is a diagrammatic form of the business for this six months.

Hon. Mr. FOY: The average is brought down afterwards from this.

Mr. BARTON: This is the peak load (indicating on diagram). The highest load reached at any moment on that day, that is the average for that particular day of 24 hours.

Sir ÆMILIUS IRVING: You are paid for that high peak load.

Mr. BARTON: No; we are paid for the average.

Hon. Mr. FOY: Have you an instrument that records that, or is it the result of somebody else going into it?

Mr. BARTON: It is done afterwards. What is recorded is the number of horse power hours, and by dividing the number of horse power hours by 24 you get the average horse power for the 24 hours; that is the way that you arrive at it.

Sir ÆMILIUS IRVING: What is put forward on behalf of the Commissioners gets rid of that calculation. It goes to some particular instrument which marks where it has been. It does not go into any detail in reference to that, because they deny being bound by that examination of figures: they want to go to an instrument which is marking the amount of power that has passed through their machinery.

Mr. GRIER: If the next month we are up there, the line is there: if next month down there, the line keeps there (indicating). It is forever increasing; never decreasing.

Mr. CASSELS: There is one point I would like to state in answer to Sir Æmilius Irving. I understand his view is that peak load and the capacity to develop are the same; in other words, do I understand if we have the capacity to develop it does not matter whether we ever attain the peak or not, if by the capacity we have installed we can reach that peak.

Sir ÆMILIUS IRVING: I do not exactly understand what you mean, but I am not pretending to say that you are trying to confuse me at all.

Mr. CASSELS: You put your ground on the test of the development of a particular company.

Sir ÆMILIUS IRVING: We are only speaking of the development.

Mr. CASSELS: Supposing we did not sell during the next year at all, nevertheless the point of development has been reached.

Sir ÆMILIUS: We have nothing to do with that.

Mr. CASSELS: But you say when the development has reached such a stage that marks the price we have to pay?

Sir ÆMILIUS IRVING: The price of rental you have to pay.

Hon. Mr. FOY: If shut down for three months?

Sir ÆMILIUS IRVING: They still have to pay rental at that high peak, because it is for some economical reason of their own that they have shut down.

Hon. Mr. FOY: What clause in the agreement makes them do that?

Sir ÆMILIUS IRVING: Because it says that when they have developed anything above 10,000 horse power they are to pay at the rate of—I think it is $1.

Mr. GRIER: Yes, $1.

Sir ÆMILIUS IRVING: One dollar per annum for the excess that they manufacture or generate.

Mr. NESBITT: It does not say that.

Sir ÆMILIUS IRVING: That is my construction. I am asked to point out what is the clause I rely upon, and I say that is the clause.

Hon. Mr. FOY: Suppose they shut down for three months, they are not generating or manufacturing.

Sir ÆMILIUS IRVING: But they have reached their capacity to generate. If they choose to shut down they do that for economical reasons. If there is no water, as happens in some mines, then the mine worker gives up and backs out altogether. These gentlemen have got that very clause, that at any time they may give notice and step out of any liability to pay rent.

Hon. Mr. FOY: The agreement says the rental is to be at the rate of so much upon what they generate, and so on. Suppose they shut down six months, they are not then generating or developing; and what clause in the agreement says they are to pay rent on what they have not generated?

Sir ÆMILIUS IRVING: They have to pay rent whether working or not.

Hon. Mr. FOY: But the rent is at a certain rate on a certain number of horse power which they generate.

Sir ÆMILIUS IRVING: But they begin by being liable for $15,000 by way of dead rent on 10,000 horse power, whether they shut down or not, and they went on at once and had to pay, and did pay.

Hon. Mr. FOY: That is clear; but for the excess rent there are certain words used in the agreement charging them a rental at a certain rate per annum upon certain things.

Sir ÆMILIUS IRVING: If they generate more, then they are to pay an additional rent.

Hon. Mr. FOY: On something that they generate.

Sir ÆMILIUS IRVING: That additional rent is an additional sum upon all the circumstances of the contract under which the original $15,000 is payable. The increase of the amount does not in any way vary the contract, except as to measure.

Hon. Mr. FOY: I want to know as to the words you rely on.

Sir ÆMILIUS IRVING: Here is the agreement; there are printed copies by the hundred somewhere.

Hon. Mr. FOY: (peruses agreement). They are to pay $15,000 anyway, no matter what happens?

Sir ÆMILIUS IRVING: That is clear.

Hon. Mr. FOY: Then the excess:—

> "And in addition thereto payment at the rate of the sum of one dollar per annum for each electrical horse power generated and sold and used or disposed of over 10,000 electrical horse power up to 20,000 electrical horse power."

Now, what is there in that agreement to say they shall pay rental whether the power is generated or not generated, which would be the case if they were to shut down for six months? Is there any other clause?

Sir ÆMILIUS IRVING: If they generate for one day—I am meeting you face to face upon it, I am not avoiding anything—if they generate for one day, then their power and authority to draw water is through a certain class of machinery, which has mounted up and been extended beyond the original 10,000 horse power up to whatever it is. The point my learned friends did not seem to reach or admit is, that this is a measure to pay for the quantity of water the works, as constructed, have power to take from the river.

Mr. CASSELS: I would just like to make one remark in answer to that. Take, for instance, the Ontario Power Company. We pay a dead rent for the right to take water that will develop whatever power we can make through our pipes and works. We start in. Now, is it ordinary common sense to imagine that this company is going to spend millions of dollars with that authority to take that water, if we are not going to lay our pipes and build our works and have everything ready for perhaps double the capacity that we requre this year or next year to get rid of it? Ordinary business foresight would necessitate doing that, but, according to this theory, because we have chosen to put up works which would carry water capable of developing double the power that we have a market for, still, we are to pay what our plant is capable of developing.

Hon. Mr. FOY: Mr. Ross, our expert, will perhaps give us his views.

Mr. ROSS: Of course, I cannot speak from the legal standpoint, but only from the narrow technical standpoint. In doing that I must take the clause which would enable an engineer to measure the power sold. The clause I have here speaks of one thing, and one thing only, and that is horse power. Now, contrary to an impression that may have been given in some way or may have been derived, a horse power has a very definite meaning. It is a rate of doing work. Now, it does not say in this contract that you shall supply energy or anything else but horse power, and horse power is measured, it is so definite that it is measured on an instrument which indicates instantaneously. You read it on your switchboard through the working of a needle on a meter. So here is an instantaneous instrument to be used in measuring horse power.

Mr. NESBITT: That is a certain quantity of energy to raise 33,000 pounds in a minute.

Mr. ROSS: It is the rate at which you can do work. Your company, all the companies here, every company in Canada, sells power, not only on the

kilowatt hour basis, but on the horse power basis. What the companies appear to be pleading for is the selling to them of power on the kilowatt hour basis, that is on the average that would have to be measured by instruments which would total up the amount of power used during each hour, and from that summation take the average. Here is a contract which calls for horse power, which is a perfectly definite thing, and these companies will sell their horse power in precisely that way to their customers. A customer may impose a minimum, but at the same time the company sell in identically the same way as is contemplated in this contract, reading it as a technical man would. There is another question here. This clause speaks of the electrical horse power "generated and sold, and used or disposed of." That is reiterated and repeated throughout the contract. It is rather a cumbersome clause, but if it has any meaning, it appears to me that "generated, and sold, and used or disposed of" may be divided and be capable of two separate meanings. One is, "generated and used" by the company, and the other is, "sold or disposed of" outside the company. Now, there has nothing been said of this concrete case given here. The first part of the clause may be taken as an abstract way of dealing with the matter. Here is a concrete case: 30,000 horse power, which is derived at a certain definite figure. Now, you cannot, by any process of averaging or taking the average of maximums or average of anything else, attain that result.

Mr. NESBITT: You cannot?

Mr. ROSS: Except in one instance, and that one case is an impossible one; that is where the horse power is developed during 24 hours continuously, that is, charging the horse power for the whole day.

Mr. NESBITT: Take your affidavit, turn a little further down. How do you get to that 30,000? You take the total throughout the time and divide it. That is the only way it can be done.

Hon. Mr. FOY: This concrete case relies upon a generation, use, sale or disposal of 30,000 electrical horse power. It does not say for the whole year kept up at that figure the gross rental shall be $32,500 per annum.

Mr. ROSS: Exactly, per annum, for the whole year. So there is a definite figure that can only be attained by the use of the maximum. As I understand it, that means the basis of the rental.

Hon. Mr. FOY: It does not say on its generation, use, sale or disposal kept up for the whole year, but on generation and use of that, not per annum or throughout the year, but on that being generated the gross rental shall be $32,500 per annum. That is the point Mr. Ross is making.

Mr. BLACKSTOCK: It is on a per annum generation and use.

Hon. Mr. FOY: Not in the example the clause gives, but immediately on the generation, use, and sale or disposal. That is the point Mr. Ross is making I am only drawing Mr. Nesbitt's attention to it.

Mr. NESBITT: Yes, Mr. Irving, and I drew the clause.

Mr. ROSS: The basic rental is $15,000, the primary excess rental over 10,000 horse power at $1 would be $10,000, the second excess rental is 75 cents over 20,000 horse power, which would be $7,500; making the total of $32,500. There is another point—

Mr. NESBITT: What is the use of stating that to the Attorney-General? Pardon me for being a little impatient, but what is the use of saying to any person of common sense that the way of doing that is not by the average horse power.

Hon. Mr. FOY: Mr. Ross has not finished his explanation.

Mr. NESBITT: Is not that the common sense way of doing it? And it is done. That is the way our companies are putting it in, and that is the only way.

Mr. Mr. Foy: Mr. Ross had better make his explanation, and you can follow him afterwards.

Mr. Ross: There is another thing which might possibly have some bearing on the question. It says here: "for each electrical horse power generated and sold, and used or disposed of over 10,000 electrical horse power." There is a definite line drawn. When you get your peak beyond that you have to pay so much more. As a technical man I could not interpret that in any other way than what I have given, and I do not know how anyone else could. I assume the companies and Commissioners knew what they were doing when drawing up this agreement and I assume the companies were possibly better posted than the Commissioners in drawing it. That word "horse power" is used in their own contracts in selling power, and why should it not be accepted in this case at its technical meaning?

Mr. Barton: Take the element of time into consideration. As Mr. Ross just stated, horse power is the rate of doing work. The thing sold to the companies is horse power hours, and in order to determine horse power hours you have to determine the time. If you have one horse power working a year, you have the same amount of energy or work as you have if you developed two horse power during six months; you have one horse power a year in each case. If you take the instantaneous horse power readings, as Mr. Ross has suggested, you can get the average by taking the average of those instantaneous readings, or you can get it by taking the measurements of the horse power hours and dividing by the number of hours in the year, six months, or day, as the case may be. But the actual commercial output of your plant is horse power hours, and it is not horse power, which is simply a rate of doing something, a rate of doing work, and you cannot very well base a charge on a mere rate any more than you can on a velocity.

Mr. Langmuir: I would say, although Sir Æmilius Irving is responsible for this agreement, I have good reason to believe it was drawn by Mr. Stetson, it is his phraseology. I know when it was taken up to Mr. Ward—

Mr. Nesbitt: That phraseology is Mr. Rankin's, not Mr. Stetson's.

Mr. Langmuir: I know Mr. Stetson had to do with it.

Mr. Nesbitt: I think he looked over it for probably half an hour. But it does not matter.

Sir Æmilius Irving: You say who drew it. The agreement is there to speak for itself; but it is very well known that it was drawn by these gentlemen on the opposite side, who went up to Mr. Hardy to get an abrogation of the monopoly clause.

Mr. Nesbitt: We did not go to get abrogation.

Sir Æmilius Irving: Yes, it was passed at the same negotiation.

Mr. Nesbitt: I understood the Government wanted the abrogation.

Sir Æmilius Irving: I do not know how that is, I never knew anything about it, except the new specifications and that particular paragraph were handed to me to incorporate in those terms.

Mr. Nesbitt: I saw Mr. Hardy probably 15 or 20 times in connection with it.

Sir Æmilius Irving: I did not see him at all.

Mr. Langmuir: We need not discuss that. I was under the impression, Mr. Nesbitt, it was Mr. Stetson, but if it was Mr. Rankin, that makes it still stronger, because he was experienced.

Mr. Nesbitt: The notion was that Mr. Hardy in introducing the bill into the House rather made, as a matter of politics, a good point, as he thought, that they had abrogated the monopoly clause. Mr. Langmuir may, or may not have been there, but the idea was to abrogate the exclusive mono-

poly under the $25,000 rent, and the $15,000 was then fixed, and as to the balance, the Commission were to become partners with the company.

Mr. Ellis: In regard to what has been said about this clause, I may say that in a conference between the Commission and the President of the International Railway Company we have come to an agreement precisely on the terms the Commission are now contending for.

Mr. Cassels: It seems to me, as far as I am concerned, that we have fulfilled all the duties cast upon us, we have given you our views very fully. I had come thinking there was an open mind on the subject.

Mr. Ellis: So there is.

Mr. Cassels: I suppose it is a matter now with which the Chairman and the open-minded Commissioners will deal.

Hon. Mr. Foy: Well, I shall require to go through the shorthand writer's report before dealing with the matter.

REVIEW OF THE REPORT OF WILLIAM SPENCER, M.A., Ph.D., F.G.S., ON THE PHYSICS OF THE NIAGARA RIVER.

By Isham Randolph, C.E.
1908.

April 13, 1908.

Mr. James Wilson,
Superintendent, Queen Victoria Niagara Falls Park,
Toronto, Canada.

Dear Sir,—You have referred to me for discussion certain questions raised by Mr. William Spencer, M.A., Ph.D., F.G.S., in relation to the effect upon Niagara Falls of the withdrawal of water for power purposes and of the tendency of this withdrawal to lower Lake Erie.

These are questions of grave moment and anyone having the temerity to differ with Dr. Spencer—when he asserts as indisputable facts and then gives his own conclusions thereon—must be able to support his counter views with incontrovertible proofs.

Before plunging into the issues so strongly drawn a brief review is proper of the conditions in that stretch of the Niagara River between the point where it receives the effluent waters of Lake Erie and the first of the cascades over which it tumbles in its headlong course to the Falls. Mr. Spencer has described that stretch of the River, and I might quote wholly from him had he not omitted so many details necessary to a complete understanding of the hydraulic conditions.

The U. S. Geological map prepared in 1901 indicates that the river begins at Horse Shoe Reef, which is three and one-third miles above the International Bridge. The profile of the river prepared by the Deep Waterways Commission of 1900 has its zero opposite the angle of the Buffalo breakwater, which is nearly opposite the ruins of old Fort Erie and is two and one-third miles above the International Bridge. This profile gives the elevation at Station O as 571 above sea level, and states that the lake level at that time was 571.5. Taking this as a starting point, I will follow the river down.

In the next 4,400 feet it drops 3.6 feet (elevation at guage 3, station 44, opposite the waterworks intake, is 568.4) and the resulting hydraulic gradient is .000818 (4.32 feet per mile). The width of river here as scaled from the

map (Plate No. 84, U.S. Deep Waterway Board of Engineers) is 1,870 feet. The elevation given at station 70, guage No. 4 opposite Ferry Street is 567.3. As the distance is 2,600 feet and the drop 1.1 the hydraulic gradient is .000423 (2.23 per mile). The width of the river here, as scaled from the map, is 1,650 feet and is the narrowest section. The extreme depth indicated here is 27.2 feet. The next guage taken is No. 6 at the International Bridge station 122; its elevation is given as 566.8; the drop is therefore 0.5 in 5,200 feet and the gradient 0.0000961 (0.507 per mile). The profile indicates this as the deepest part of the River. The lowest bottom elevation given on the cross section is 519, hence the resulting depth was 47.8 feet. This bridge is 1,806 feet long; of this distance 129.5 feet is shut off by piers. There are nine spans of the following width, starting from the American side: Span No. 1, 151.5; No. 2, 154.1; No. 3, 156.2; No. 4, 234; No. 5, 235.8; No. 6, 235.3; No. 7, 186.9; No. 8, 184.3; No. 9, 138.3. For a description of this bridge and the current measurements taken for determining volume of flow see page 298 *et sequitur*, Vol. 1 of the "Report of the Board of Engineers on Deep Waterways between the Great Lakes and the Atlantic Tide Waters," 1900.

At station 358 (Rattlesnake Island) the elevation given is 565.6, showing a drop of 1.2 feet in 4.47 miles, a gradient of .000051 (0.269 per mile). At station 992+50 (Schlosser's Dock) the elevation given is 563.05, a drop of 2.55 in 12.02 miles, or a gradient of .0000402 (0.212 per mile). The profile from which this data is taken follows the thalweg of the channel which separates Grand Island from the State of New York, to which it belongs. The shorter route is along the International boundary line, so the gradients in that channel will be slightly steeper than those given on the route taken by the profile. Schlosser's dock is 16.49 miles down stream from the International Bridge, and, as ascertained by scaling from U.S. Geological map, the distance therefrom to the rim of the First (or Green) Cascade is two and one-third miles, making the total distance from the bridge to the cascade 18.8 miles. It was important that this profile should be extended to Port Day, the entrance to the Niagara Falls Hydraulic and Manufacturing Company's intake, and I am enabled to do this basing the extension upon information given me by the Niagara Falls Power Co. and the Hydraulic Company. On June 2nd, 1906, the Niagara Falls Company took levels at Schlosser dock and at their intake guage showing the elevation at this dock to be 562.85 and at the intake to be 560. 85 (N.F.P. Co. datum), hence the drop was 1.47 feet on that day. The profile of the Deep Waterways Commission was constructed from information secured October 28th, 1897. I got from the Hydraulic Power Company their guage reading at Port Day, on October 28th, 1897, and found it to be 560.6; adding the correction to make the datum agree with U.S. datum prior to 1903, 0.698, I make the elevation 561.3; subtracting 1.47 from 563.05, I find the elevation at the Niagara Falls Intake to be 561.58 or .28 higher than the elevation found for Port Day. The mean difference between these two guages for October, 1897, was .15 of a foot, which subtracted from .28 leaves a difference of .13 to be accounted for, which is inconsequential.

The mean corrected elevation of Port Day for October, 1897, was 561.70. The mean elevation at Buffalo for October, 1897, was 571.75, showing a drop of 10.05 feet. The drop on October 28th, 1907, as determined by subtracting from the lake level at Buffalo (571.5) the elevation at Port Day, 561.43 (563.05—1.47+.15) was 10.07: this close check justifies me in extending the hydraulic profile from Schlosser's dock to Port Day as I have done. The distance being 9,000 feet and the drop 1.62, the hydraulic gradient becomes

.00018 (0.95 per mile). From Port Day to Goat Island the distance is about .8 of a mile and the drop 1.38. Having now constructed a characteristic profile from Lake Erie to Goat Island we have a working basis within a narrow range of possible conditions.

It must be borne in mind that the profile does not correctly represent the hydraulic gradients for all seasons of the year, as these are subject not only to changes in the level of Lake Erie but also to modifications due to varying values of the co-efficient of roughness brought about by acquatic vegetation in the stream which serves during the period of vigorous growth to increase that co-efficient.

There are certain natural laws which must be always had in mind while considering these questions.

In any channel through which an approximately constant volume of water flows, the velocities will be determined by that volume, the area of the stream, the slope and the degree of frictional resistance offered by the bottom and sides of the channel. The volume being constant the hydraulic gradient will vary with the natural declivity of the bed of the channel, the cross section and the frictional resistance. If the bottom of the channel is level, or if it sinks below the discharge end of the stretch considered, then the water must make its own gradient, and this it does by piling up at the intake end until it has built up a head sufficient to drive its volume through the channel. These are the basic principles involved in stream flow.

Few inland rivers have uniform hydraulic gradients throughout their entire length. I do not know of one that has. There are stretches of channel with steep gradients and low velocities ending in stretches of gentle gradients and low velocities; these again being succeeded by steep gradients and high velocities; but for a given volume of discharge there is a fixed regimen for each stretch, with its characteristic gradient. If in any stretch the fixed regimen is disturbed by a natural or artificial cause there results a readjustment of slope. If at the discharge end of any characteristic section the capacity of the channel to discharge water be increased by deepening, or the creation of collateral channels, and the volume of supply remain as before, the result will be a dropping of the water surface to an extent which reduces the cross section to an area which just cares for the supply. This means steepening the slope in the stretch of channel in which the changed conditions takes place, but it does not mean that this dropping extends back up stream on a new gradient parallel to the former gradient. It means the introduction of a new water plane the angle of whose surface to the horizon is greater than the angle of the original water plane, and this angle will intersect the original water plane at some point up stream at which the cross section is sufficient to accommodate the constant flow, and above that point the fixed regimen of the stream will not be disturbed.

In the case now under consideration we have as a fountain head Lake Erie, fed by the outflow from the upper Great Lakes and the precipitation within its own drainage basin. Its outlet is through the Niagara River. The shores of the lake converge at its north end and guide the waters into the river channel, the identity of which seems to begin at the "Horse Shoe Reef," three and one-third miles above the International Bridge. Our map (Exhibit I.) copied from the map of the U.S. Geological Survey and annotated to illustrate this report, shows the course of the river, its varying widths and the obstructions in its course. The profile (Exhibit II.) shows the slope or hydraulic gradients and the bottom of the channel on the line of greatest depth (the Thalweg). These do not show the cross-sectional areas, however. The relations between the levels of Lake Erie and the Port Day intake are

matters of record; the U.S. Government has kept records of the lake levels and the Niagara Falls Hydraulic and Manufacturing Company has maintained an automatic recording guage at Port Day for a long term of years. To these I have had access and I have tabulated the monthly and annual means of these readings from 1890 to 1907 both inclusive, and to make them comparable, I have made the necessary corrections in the Hydraulic Company's elevations, so that both, as shown in the tables (Exhibit III.) are in terms of sea level.

With the data thus assembled and the hydraulic principles involved thus fully presented, I am now prepared to take up Dr. Spencer's report and consider it upon its merits. My discussion will be limited to Lake Erie and the Niagara River in their relations to each other. At the outset of my investigations I felt that for a complete discussion of the questions submitted to me, I should have to know as definitely as possible the amount of precipitation annually in each of the Lake Basins, but I became satisfied that I only have to do with Lake Erie as a basin discharging certain volumes of water and that the sources which supplied that water were not subjects the investigation of which need be gone into. If Lake Erie is above a mean stage we know that an excess supply has entered it: if it is below the mean level it is certain that there is a shortage of supply. This reasoning eliminates the Chicago Sanitary and Ship Canal from the discussion. The first question to be answered is, does the taking of water from the Niagara River above the Falls tend to lower Lake Erie?

No. 1. On Page 261. Chap. XXI.:

"Since writing the above the International Waterways Commission has appeared. They recommend the limitation of the power on the Canadian side to 36,000 cubic feet per second, and on the New York side to 18,500 cubic feet per second: in addition to which is the discharge of 10,000 cubic feet for the Chicago Canal— in all 64,500 cubic feet, including the Welland and Erie Canals, or nearly 37 per cent. of the low water discharge. This amount will lower the river producing effects upon the Falls only a little less than the diversion of the full franchise volume mentioned. So also it will most seriously impair navigation on the Upper Lakes, as will be explained in the next chapter."

With the closing sentence of this quotation I shall take issue.

No. 2. On Pages 265-6, Chap. XXI., Part two:

"Below Grand Island the two branches of the river unite and form a basin, which, just below the creek entrance at Chippawa, is 5,050 feet across, with soundings, so that the area of the cross section can be determined. This is 83,000 square feet, the mean depth is sixteen feet. The discharge is that of Lake Erie, with only a small increase from the creeks at Chippawa and Tonawanda. It took fifteen to twenty minutes for floats to cover the distance from the line of soundings, where the area is measured to the first cascade, at the end of which is situated the forebay of the Ontario Power Company, showing the small descent of the river. From this basin or above it the power franchises allow the withdrawal of 41,200 cubic feet per second, which represents 20 per cent. of the low water flow. Accordingly the proportional diversion represents the unmodified lowering of this basin to the extent of four feet for low water and 3.2 for average water. To this must be added 10,000 feet for the Chicago Canal, thus making a total of 51,200 cubic or 25 per cent. for mean water, and 30 per cent. for low water. This total diversion at or above the first cascade should be modified to an undetermined amount from confining the river to a narrower channel after the shallower rim shall have been mostly drained.

If the proposed limitation be carried out then from 64,500 feet must be deducted the Canadian franchises of 19,750 feet taken from below the first cascade, leaving 44,750 cubic feet to be withdrawn from above it. This would make the theoretical lowering of the basin, without corrections, amount to more than 3.5 feet for even mean water or over four feet for low water.

The withdrawal of the water behind the rim of the first cascade has the same effect as the deepening of the outlet. It increases the velocity of the river above, which for a time lessens the amount of the subsidence in the basin until the Erie level is adjusted to the new conditions. Even now the rim of the first cascade from Goat Island is covered by only from one-half to one and one-half feet of water.

These observations were made after there had been a considerable diversion of the river and on a day when the lake was at its mean quinquennial level. The deeper the water upon the rim at present, provided it be eventually drawn off, the more would be the lowering of the surface behind it, due to its diversion through artificial orifices; while there would be less water on the rim the discharge would be diverted into the narrower and deeper channel, causing some retardation of the current in the basin. There is nothing to lead me to expect that the lowering will be less than three feet for mean water and more for low." (See Page 272).

No. 3. On Page 268, Chap. XXI.:

"If the subject be considered at all, there seems to be an impression that the diversion of the water at Niagara will not affect the higher lakes. If the water were all taken from below the Greens or First Cascade at nearly fifty feet down the rapids the effect upon the upper river would be unappreciable. But most of the water under the franchise will be taken from or above the rim which forms the barrier to the basin of the upper rapids."

The truth of the "impression" stated in the first sentence of this quotation is demonstrable and will be demonstrated.

No. 4. Chap. XXI., Part 2, Pages 272-3:

"With the gradual lowering of the basin, a difference of one foot in the slope of the river should increase the velocity at the outlet of Lake Erie by three per cent., which in the course of a year and a half would lower Lake Erie nearly a foot, with the complete effect shown sometime afterwards. while some as yet unmeasured factors may somewhat retard the velocity and increase the time, the ultimate effect must be the same after the equilibrium should be restored at a lower level of the lake. Subsequently comes the lowering of another and still another foot, or more, so that in a few years at most from the time of the complete use of the franchise power, Lake Erie will be lowered by three feet, or more for prevailing low water—not taking into account the effect of further deepening of the lake outlet, which may recur at any time . . . So much for the physics of the river as the question appears to me."

No. 5. Chap. XXI., Pages 274-5.

"A marked increase in the rainfall has occurred since 1900, as compared with the mean rainfall during the decade ending with that year. On examining the tables of the fluctuations of level and rainfall, and taking into account the effects of the Chicago Canal upon the different basins, I find from the results that Lake Erie should have risen 0.46 of a foot more than it actually has done when compared with both Lake Ontario and Lake Huron. What is the cause of this failure to raise the level of the Erie basin where the rainfall has increased not only over the amount of the previous period but also in excess of that of the other basins? Certainly there is but one explanation, namely, the excess has been diverted by the power uses from above the rim

of upper rapids during the five years ending with 1905 over the mean of the ten preceding years of low water. Adding to this the effect of the Chicago Drainage Canal, the fall which the lake has experienced from the artificial diversion amounts to 0.68 of a foot in height, or about eight inches. At the close of 1905 the total diversion of water was equivalent to the lowering of Lake Erie by about nine inches. Here then is direct evidence that the diversion of water has lowered Lake Erie to more than eight inches, while as yet not over one-quarter of the franchise power has been brought into use.

But the superficial observer would not see the change on account of the increased rainfall, by which the actual present level of Lake Erie is not lowered below that of previous years. Had not the diversion occurred while a corresponding rise actually took place in Lake Ontario and Lake Huron, Lake Erie would have been raised 0.68 of a foot (0.46 at Niagara and 0.22 at Chicago.)"

Not all of Dr. Spencer's faulty reasoning is embodied in the quotations made, but enough is quoted to bring out the fallacy of his conclusions and to enable me to demonstrate the facts to be counter to his statement of them.

Let us first deal with the effect upon Lake Erie of withdrawing water from Niagara River above the rim of the first cascade. This withdrawal in franchise volume, the Doctor tells us will lower Lake Erie "three feet, or more, for prevailing low water."

I have set forth the habits of obedience to the laws of hydraulics universally found among rivers. Dr. Spencer substitutes the speculations of a geologist for the deductions of the hydraulician, and reaches conclusions which do violence to all hydraulic law. Niagara River illustrates most beautifully the laws of hydraulics. Take this very stretch of the river that the Doctor calls the basin above the first cascade. He describes a cross section bounding this basin on the east, "just below the creek entrance at Chippawa" (see Quotation No. 2), where the width is 5.050 feet, the mean depth 16 feet and the cross section area 83,000 feet. The surface elevation here must be approximately that of Chippawa creek, or on a given date 562.80 Now the fall from Chippawa to the west end of the intake works of the Ontario Company is approximately 4 feet, and the distance about .8 of a mile; the gradient per mile would therefore be 5 feet. The cross section described below the entrance to Chippawa Creek is at the down stream end of a 12 mile stretch of channel in which distance the drop is 2.55 feet (see profile Exhibit II.) or a gradient of 0.212 per mile. It is plain to see that the drop of 4 feet from Chippawa to the Ontario intake is absorbed in a distance of .8 of a mile and that the regimen in the 12 mile stretch above is not disturbed by the drop to the intake of the Ontario Power Company. This is a sufficient demonstration to dispose of the theory that a drop of one, two or more feet at the first cascade would accelerate the velocity in the narrow and precipitous channel above the International Bridge. The United States Government has in its employ men trained in the science of hydraulics and they have the experience gained by long years of application of their professional knowledge to the problems we are considering. Some of these men have been charged with the duty of studying the Niagara River in its relations to Lake Erie and their determinations of the volume of discharge discard all consideration of the effect of the rapids above the falls upon that discharge because they know that Lake Erie influences the condition at the rapids above the falls by the volume of water which it sends down to them, but that these rapids in no way affect the volume of outflow from the lake. These engineers have set forth formulas for determining the discharge of Lake Erie and these take no account of the conditions nineteen miles down stream. The discharge formula adopted by the Board as set forth in their report of 1900 is:

$Q = 168812 + 17762\ (Y) + 1409\ (Y)^2$.

In this formula 168812 is the volume of discharge for a lake elevation of 570.00; Y is the difference between 570 and the elevation of the lake at the time the discharge must be determined: 17762 is the rate of increase for one foot of rise above 570 increased by 1409 multiplied by the square of the rise above 570, and Q is the resulting volume of flow.

The formula used by the engineers of the United States Lake Survey is found on page 2,857 of the Report of the Chief of Engineers, U.S.A., for 1903, and is:

$Q = 158500 + 22462\ (C-57)$.

In this formula C is the elevation of Lake Erie above sea level at the time the discharge is figured. 158,500 c.f.s. is the discharge for a lake stage of 570 and 22462 is the discharge for each foot of rise above 570. The results of computations for any given stage of lake by these two methods vary by a small percentage and the latest formula gives the smallest discharge for any given elevation of the lake. An examination of the table, Exhibit III., shows the highest mean elevation of Lake Erie in the six years prior to 1894 to have been reached in 1890 and the highest mean stage in any month that year to have been in June. The mean elevation for the year was 573.23 and for the month was 574.02. Using the Lake Survey formula for discharge we find the flow for the month of June to have been 248,797 c.f.s. The Port Day guage reading for that month was 563.15, showing a drop of 10.87 feet. The Niagara Falls Company began drawing water for power purposes in 1906. The highest stage of water since that year was reached in 1907. In July of that year the mean level of Erie was 573.33, which by discharge formula gives an outflow of 233,289 c.f.s. The annual mean elevation for 1907 was 572.80. The mean elevation for Port Day in the month of July was 562.09, showing a drop of 11.24 feet. Comparing the differences between Lake Erie and Port Day with flows of 248,797 c.f.s. and 233,298, c.f.s., 10.87 in 1890 and 11.24 in 1906, we find only 0.37 of a foot. In 1890, the Niagara Falls Hydraulic Co. was drawing so little that conditions above the first reef were practically those of unmolested nature. In 1907, the Niagara Falls Hydraulic Co. was drawing about 4,000 c.f.s., and the Niagara Falls Power Co. about 8,500 c.f.s. It is proper here to bring out a fact which has a bearing upon this discussion. The Port Day gage does not correctly indicate the general level of the water in the basin above the first cascade. This gage is at the intake to the Hydraulic Canal. Water entering that canal must be at a lower level at the entry than it is some distance away in, or else there would be no flow from the main body of water into the canal. This is exiomatic and needs no demonstration. In quotation No. 5, after discussing the low stage of Lake Erie, notwithstanding an excess of rainfall, he gropes for an explanation; the Doctor says, "Certainly there is but one explanation, namely, the excess has been diverted by the power uses from above the rim of upper rapids during the five years ending with 1905 over the mean of the ten preceding years of low water."

This recalls a housekeeping experience which came within my knowledge. A lady wishing to take a vacation with her husband arranged with his younger sister to keep house for the family while she was gone. After the vacation upon the mother's resuming the household duties the sister presented her housekeeping account and insisted that they be audited. Beefsteak was an item much in evidence: the question arose, why did she buy so much beefsteak? The answer was "Oh, whenever I could not remember what I paid money for, I put down beefsteak."

The Doctor feels bound to account for the disappearance of the water, so he puts down "power uses from above the rim of the first cascade."

Having discussed the effect upon Lake Erie of the withdrawal of water from the Niagara River above the falls and shown conclusively that navigation is not in the least menaced by that withdrawal, I will take up other phases of the question presented by Doctor Spencer. He says on Page 260, Chapter XXI.;

"Of the franchised diversion two companies on the New York side and the Ontario Company on the Canadian, take their water from above the first cascade, and consequently affect the river common to both countries . . ."

"It is the diversion of water from the rim of the first cascade which will further shrink Niagara Falls."

When the Doctor says that two companies on the New York side take their water from above the first cascade, he asserts a fact. When he includes in that statement, the Ontario Power Company on the Canadian side he falls into error, for at Port Day, the intake to the Niagara Falls Hydraulic Company, the elevation of water surface is nearly four feet higher than it is at the east end of the Ontario Power Company's intake, which indicates that the onflowing stream must have crossed the crest of the first cascade before it can enter the intake. There is room for argument, however, as to the exact location of the reef which forms the lip of the first cascade, but there is no possible doubt of the fact that the Doctor is in error in his assertion that more water is drawn from above the lip of the first cascade through the intake which admits water to the gathering basin of the Ontario Power Company than was drawn before the construction of those works.

In reaching an intelligent understanding of this situation a study of the conditions within the area enclosed between the location of the now existing intake through which water is admitted to the gathering basin of the Ontario Power Company is very instructive and serves to invalidate Mr. Spencer's contention that a greater volume of water is being drawn over the lip since the completion of the Ontario intake than was the flow over this portion of the channel in its natural condition. In a state of nature the sweep of the river was along the convex shore, and the impetuosity of the current was such that it had indented the uniform curvature of the west shore and secured a small channel around the resisting uplift known as Dufferin Islands. Where this sweep to the west occurs we have contours showing the surface of the rock floor. These range from 548 to 549, or an average of 548.5. Surface water elevations were taken before the building of any obstruction to free flow, and these range from 554.9 to 555.5, or an average of 555.2. The length of the present obstruction to free flow is about 600 feet. With this data to work from we find an approximate cross section of 4,020 feet. The velocity may be assumed with some degree of certainty at 6 feet per second, hence we would have a flow of 24,120 second feet. Since the construction of the head works of the Ontario Power Company we have an altered condition. These head works have a total length of 596 feet and are designed to control the flow into the gathering basin. There are 50 openings each 9 feet—5 inches x 6 feet = 56½ square feet, or a total opening of 2,825 square feet. Under no possible conditions could a volume of water enter the gathering basin through these openings as great as that which formerly swept over this course. I submit a plat (Exhibit IV.) showing the location of the intake with contour lines indicating the original surface and the boundaries within which the excavation has been made down to elevation 545. This exhibit discloses the fact that the rock reef at the west end of the intake was not broken through and to-day it rises to elevation 549.

Exhibit V. is a plat showing a stretch of the river beginning at the head of Goat Island and extending down below the Falls. On this plat the International boundary line is shown and lines are drawn parallel to the east boundary line (produced) of the Queen Victoria Niagara Falls Park at intervals of 200 feet. On these lines on the down stream side, the distances are marked from the boundary line to their intersections with the original shore line; and where they cross the line of the intake the distance to it from the boundary line are marked on the upstream side. This exhibit brings out very clearly the extent to which the channel has been contracted by the intake.

Exhibit VI. is an elevation of the intake showing the openings through it and on its face a hydraulic profile shows the recent flow line and in dotted lines are approximate water surface of 1902 before the works had changed natural conditions. The openings in the intake are designed to admit ample water to supply the three conduits which are to carry water from the gathering basin to the Power House below the Horse Shoe Falls. Only one of these steel conduits is now in place; it is 18 feet in diameter, hence its cross sectional area is 254.57 square feet; the velocity figured on in this conduit was 15 feet per second, hence the volume of flow should be 3,818 feet per second. Three times this volume of flow would be 11,454 cubic feet per second; this volume must be taken into the gathering basin with enough more to insure a good entry head into the conduits, a requirement far below the volume which formerly swept over the area now enclosed by the structures of the gathering basin.

The facts set forth herein and illustrated by the exhibits prove beyond contradiction that the works of the Ontario Power Company do not tend to lower the water above the first cascade. This being true, the only water extracted for power purposes which tends to lower the water above the first cascade is taken by the Niagara Falls Power Company and the Niagara Falls Hydraulic and Manufacturing Company on the New York side. The volume taken by the first of these companies is 8,500 cubic feet, and by the second is 4,000 cubic feet, or a combined volume of 12,500 cubic feet; somewhat less than the 44,750 cubic feet per second upon which Dr. Spencer predicted his argument. (See Chap. XXI., Part 2, Page 266).

That the water taken from the river for power purposes above the falls must to the degree of taking diminish the volume tumbling over the precipice is indisputable. This diminution has not as yet marred the scenic beauty of this wonderful work of nature, but the volume of diversion can not be much increased without marring that beauty. It is within the range of accomplishment to greatly increase the volume of water to be converted into power and still preserve the sublimity, grandeur and beauty of the falls, and the expenditure necessary would be amply justified by the results. This is an idea which need not be amplified here but it leads up to the great question of the conservation of the waters in the drainage areas of the Great Lakes. This conservation calls for international co-operation. In these lakes we have our seasons of surplus water and our seasons of deficient flow. The surplus is allowed to run to waste and when the low period comes there is no relief. These lakes are capable of storing all of the surplus waters and it is for man to build the works which will bring that capability into play. The mean between the high and low waters is what our commerce needs. In the days of Pharoah there was a Joseph to interpret the monarch's dream on the fat and lean kine. And the monarch appointed the interpreter to store the overabundance of seven years of plenty therewith to avert seven years of famine when the crops failed. We are not confronted with dreams needing an interpreter. The seasons have told their story year by year and we know it as far back as the records of the

Great Lakes have been preserved. We know that each year there is an outflow from the lakes far in excess of any human need and afterwards comes a period when the deep laden ships drag their keels upon the bottoms of the inter-lake channels. This need not be, it ought not to be, and it can be averted by the construction of controlling works at the head of the St. Mary's River and at the head of the Niagara River which would make possible absolute control of the waters so that there need never be a low stage of water, and a constant mean flow could be maintained. The cost of these works is insignificant, compared with any other method of providing deep navigation. The time to be consumed in building the works would be shorter by years than that needed for any other mode of relief, and the benefits in all of the upper lakes would be immediate.

In closing this report, I wish to express my appreciation of the courteous way in which the officials of the Niagara Falls Hydraulic and Manufacturing Company, and Niagara Falls Power Company, the Ontario Power Company, the Electrical Development Company, the Engineer officers of the U.S. Engineer Corps and the officers of the U.S. Department of Agriculture, have given me access to all of the sources of information bearing upon the subject which were within their custody. Not less am I indebted to you for substantial aid in the preparation of this report, which I now respectfully submit.

Isham Randolph,
Consulting Engineer.

PARLIAMENT BUILDINGS—View from South-west.

REPORT

OF THE

Minister of Public Works

FOR THE

PROVINCE OF ONTARIO

FOR THE YEAR

1908

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by L. K. CAMERON, Printer to the King's Most Excellent Majesty.
1909.

WARWICK BRO'S & RUTTER, Limited, Printers,
TORONTO.

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REPORT

OF THE

Minister of Public Works

FOR THE

Province of Ontario

For the Year ending 31st December, 1908.

To His Honour J. M. Gibson, K.C.,
Lieutenant-Governor of the Province of Ontario.

Sir,—I have the honour to submit to you, as required by statute, the annual report on all works under the control of the Public Works Department, comprising the reports of the Architect, the Engineer, the Superintendent of Colonization Roads, and the Accountant and Law Clerk, for the year 1908.

I have the honour to be,
Sir,

Your obedient servant,

J. O. Reaume,
Minister of Public Works.

Department of Public Works,
Toronto, 1st February, 1909.

REPORT

OF THE

Deputy Minister of Public Works.

To the Honourable J. O. Reaume,
Minister of Public Works, Ontario.

Sir,—I have the honour to transmit to you the accompanying annual reports for the year 1908 of the Provincial Engineer, the Provincial Architect, the Superintendent of Colonization Roads, and the Accountant of the Public Works Department.

The Engineer's Branch.

The work of the Engineering Department for the year 1908 has included the preparation of plans and specifications for bridges on the Colonization Roads of Northern Ontario, and the supervision of their construction. Improvements have been made for the safer navigation of the Muskoka Lakes, Mary's and Fairy Lakes, Peninsula Lake, and the Magnetawan River. Improvements have been made to streams and rivers to provide better drainage and prevent flooding. Drainage schemes, to which aid was given under the Provincial Drainage Aid Act, were extended, and the usual railway inspections were made.

In addition to the repair of a large number, thirty-three new bridges were constructed during the year, of which eleven were of steel on concrete sub-structures, and the remainder were timber. One small concrete arch was also erected. The concrete work was all done by day labour, under foremen of the Department. The bridges were built under the specifications of the Highway Branch, requiring a concentrated live load of from 10 to 15 tons. All steel bridges are designed for concrete floors.

Among the more important steel bridges was that over the Spanish River at Massey, which consists of four spans, each 105 feet in length, one span 128 feet in length, with steel trestle approaches on the north and south ends of 40 and 60 feet respectively, making a total length of steel superstructure of 648 feet. A bridge over the Spanish River at Espanola consists of two spans, each 120 feet in length, with a timber trestle approach 88 feet long. A substantial steel bridge was built over the Mississauga River near Dean Lake Station, and consists of three spans each 120 feet long, on concrete sub-structure. Work on the bridge across the west arm of Lake Nipissing in the Township of McPherson was continued—this structure, with approaches, making a work 1,325 feet in length. Important timber bridges were built in the Temiskaming District in the Townships of Marter, Pacaud, Evanturel, Hilliardton and Casey, in addition to other work of lesser importance. A steel bridge 69 feet in length was built over the Mag-

netawan River at Burk's Falls; a steel bridge 80 feet long over the Big East River in Chaffey Township; another over the Muskoka River at Oakley; and a bridge with central 80 feet span, and two spans 33½ feet long, over a bay of the Lake of Bays at the Village of Dorset. In the Township of Somerville, a bridge 73½ feet long was built over the Burnt River; and a new bridge consisting of two spans each 73½ feet long was built over the Madawaska River, a short distance below Palmer's Rapids.

In Lake Muskoka, dredging was carried on at Kemp's Channel between Bala Park and Acton Island. Guard piers to cut off a dangerous cross-current were constructed in Jeannette's Channel in Lake Muskoka. The Lake Joseph Canal entrance was deepened and widened; and repairs were made to the swing bridge, crib-work, piers and glance booms on the Mary's and Fairy Lakes Lock.

In river improvement, rock obstructions were removed from the North River in the Townships of Orillia and Matchedash. A channel was excavated through Munroe's Rapids on the Mississippi River in the Township of Ramsay. The Nottawasaga River in the Township of Tecumseh was deepened and widened, and Black Creek in Monck and Watt Townships was improved by the construction of a new channel through solid rock. The outlet of Lake St. John in the Township of Mara was improved by the removal of rock obstructions.

During the year 1908, there were completed and opened for traffic 679.85 miles of new railways, making a total of 8,399.19 miles of steam railways in the Province. There are 34 electric railways having a total length of 672.42 miles. Included in the roads opened during the year are the Canadian Pacific Railway line from Bolton to Romford, and the completion of the line between Walkerton and Lucknow. The Canadian Northern Ontario Railway Company completed and opened for traffic a line between Parry Sound and Sudbury. The Temiskaming and Northern Ontario Railway has been continued to a junction with the Transcontinental Railway at Cochrane. The Grand Trunk Pacific line between Fort William and the Transcontinental junction, a distance of 188.77 miles, was completed and opened for traffic; while the Transcontinental line between the Quebec and Manitoba boundaries, a distance of 758.3 miles, is under contract. Numerous minor extensions have been carried out.

Important drainage works aided by the Province, under which a large area of swamp and drowned lands will be reclaimed, were:—The Bromley Township drainage, McIntyre Creek outlet in Drummond Township, Merrick Creek outlet in Sandwich South Township, the outlet drain in Dawn and Inniskillen Townships, the Pike and Dauphin Drainage Works in Chatham Township, the Aux Raisin River drainage in Osnabruck, Cornwall and Roxborough Townships, the Cavan Drainage works, the Ruscombe River drainage works in the Township of Rochester; the Logan Township drainage system, and the Hardy Creek drainage system in the Townships of Adelaide and Metcalfe.

The Architect's Branch.

The work for the year under the Architect's Branch has included the usual attention to the repair and maintenance of Government House, Parliament Buildings, Osgoode Hall, Brockville Hospital for the Insane, Mimico Hospital for the Insane, Kingston Hospital for the Insane, Orillia Hospital for the Feeble Minded, Penetanguishene Hospital for the Insane, Woodstock Hospital for Epileptics, London Hygienic Institute, Toronto and Ottawa Normal and Model Schools, London Normal School, Normal Schools

at Hamilton, Stratford, North Bay and Peterboro, Belleville Institute for the Deaf and Dumb, Brantford Institute for the Blind, Ontario Agricultural College at Guelph, Horticultural Experimental Station at Jordan Harbor, and the Court Houses, Gaols, Registry Offices, etc., in the Districts of Muskoka, Nipissing, Parry Sound, Manitoulin, Sudbury, Sault Ste. Marie, Rainy River and Thunder Bay.

In order to comply with the regulations of the Fire Underwriters' Association, and to secure the most satisfactory protection against fire, the entire electric wiring system in the Parliament Buildings was overhauled, and installed in a complete new system of conduits.

At O-goode Hall, an addition is being made to the west wing, and the building will be completed shortly. At the Brockville Hospital for the Insane, an Assembly Hall and Chapel were added of a substantial and creditable character. It is expected that the new Hygienic Institute at London will be completed early in the coming season.

The Normal Schools at Hamilton, Stratford and Peterborough, were completed last year, and the equipment provided. The School at North Bay is nearly completed, and will be fully equipped and ready for opening next season. Descriptions of these buildings have been published in previous reports, and the style of architecture commented upon.

Plans and specifications were prepared for buildings at the new Horticultural Experimental Station, including an Administration Building, and a residence for the Superintendent, and these and other buildings in connection therewith are nearing completion.

The new Court House at Sudbury is satisfactorily completed, with the exception of certain equipment. Plans and specifications were prepared for the new gaol at Fort Francis, and the work was completed. A large amount of detail has been demanded of the Department by these works of construction, maintenance and repair, as well as with other Provincial hospitals and institutions, all of which is more minutely described in the accompanying report of the Architect.

Colonization Roads.

Colonization road construction was actively carried on during the past year. This work comprised the opening of 293 miles of new road, and the improvement and repair of 1,090 miles of road previously opened. In the Rainy River District, 12½ miles of outlet drains were opened, to give an opportunity for more permanent and durable work on the roads benefited. On the Sudbury-Soo Trunk Road, there has been opened and cleared, under contract, 82 miles, while 12 miles of this road have been graded. A number of important bridges have been constructed, as well as several smaller culverts. These bridges and culverts are of a permanent character, of concrete and steel, and are of a good class of workmanship. A branch of this road from Sudbury to Blezard was also surveyed, and partly cleared and graded.

In response to an urgent demand, a winter road 31 miles in length was opened and cleared from Elk Lake to Gowganda, making a continuous road for traffic from Charlton to Gowganda. From Hutton Township in the south, a winter road was also surveyed and opened to Gowganda.

In all important works of opening and extending new roads, the clearing, stumping and bridging is performed under contract, while the grading is, as a general thing carried out by day labour. A number of grading machines have been sent into the organized townships of Northern Ontario for the general repair of roads constructed by this Department. Permission is at times given the municipal councils to use these machines.

thus enabling them more effectively to carry on their own work. This is done more especially in the case of roads aided by Provincial grants.

The Colonization Road Act has been found to be most effective in attaining the results sought for. The general principle of this Act provides that, where municipal organization exists in the northern colonization road districts, Provincial grants shall be expended through these municipal councils, —the grants to be proportional to an amount raised by the municipality for durable work on certain roads specified by municipal by-laws. The effect of this policy has been to encourage the people of the northern districts in enterprise on their own behalf, rather than, as under former methods, to induce them to rely solely upon the Provincial expenditure. The Provincial grants thus produce a much larger expenditure than would otherwise be available, and as this expenditure includes a considerable proportion contributed by citizens of the municipality, its outlay is carefully watched and guarded by the people of the municipality. By a close adherence to the intention and spirit of this Act, the requirements of the newer portion of Ontario can be most effectively served.

The mining activity in Northern Ontario has created an urgent demand for the extension and improvement of roads. This demand has also been increased by the construction of the Temiskaming and Northern Ontario Railway,—the traffic of which will necessarily depend upon the development of the territory adjacent thereto. As this development is very largely dependent upon the class of wagon roads with which the country is served, it is obviously of advantage that this work be carried on as expeditiously as circumstances will permit. This work of colonization road construction is necessarily spread over an extremely wide area, and in consequence is sub-divided into small amounts so that the entire benefit of the outlay is not at once apparent from a hasty examination. In a term of years, however, the accumulative benefits become strongly apparent, as the steady development and occupation of this country follows closely upon the extension of roads.

I have the honour to be,

Sir,

Your obedient servant,

A. W. Campbell,
Deputy Minister of Public Works.

REPORT OF THE ARCHITECT.

To the Hon. J. O. Reaume,
Minister of Public Works, Ontario.

Sir,—I have the honour to submit the following annual report on the buildings completed, contracts being carried out and repairs, improvements, etc., made to the various Provincial Buildings by the Architect's Branch for the year ending December 31st, 1908.

Government House.

In consequence of the retirement of the Hon. Sir William Mortimer Clarke and the appointment of the Hon. J. M. Gibson as Lieutenant-Governor, more than ordinary work was necessitated as is the case when a change of Lieutenant-Governors takes place. New carpets were supplied to the centre and north drawing-rooms and the main hall and staircase throughout the ground, first and second floors, new carpets were supplied for some of the apartments on the first floor and to the ball-room; the latter is for use when state dinners are being held. New furniture has been purchased as required and the old furniture repaired and recovered when necessary. The walls of the east, centre and west drawing-rooms have been papered and the ceilings decorated. The walls of the main hall on the ground and first floors, have been papered and the ceilings tinted. The woodwork in the drawing-rooms has been enamelled and the woodwork throughout the main hall cleaned and varnished. Some necessary painting and papering was done in the servants' wing. The deck roof of the building had to be entirely covered with asphalt as the old galvanized roof was found to be beyond repairing, a new roof and ventilators were also placed on the ball-room. Repairs were made to the heating plant and additional radiators placed in the hall and lavatories on the upper floor, and all of the plumbing appliances tested and repaired and renewed where necessary. The woodwork of the greenhouse adjoining the conservatory was found to be in a very unsatisfactory condition, a large proportion of it being quite decayed. The framing was taken down, the brickwork repaired, and a new frame of modern construction erected, cement walks laid and new benches fitted up. The heating apparatus was taken down and replaced in good order. The whole of the work was done by the workmen employed by the Department under the foreman bricklayer and foreman carpenter and foreman plumber of the Department, with the exception of the painting. A small addition has been built to the coach house, including bed-room and lavatory, to give increased accommodation for additional help. Some painting and papering was also done in this building; this work was also done by men employed by the Department with the exception of the painting and plastering. The wood slat walk from the entrance gate on Simcoe Street to the front entrance of main building was removed and a cement walk laid; the work was done under contract. Gravel was supplied for roads and walks, and plants, shrubs, etc., for the grounds. Some slight repairs were made to the lodge and gardeners' cottage.

Parliament Buildings.

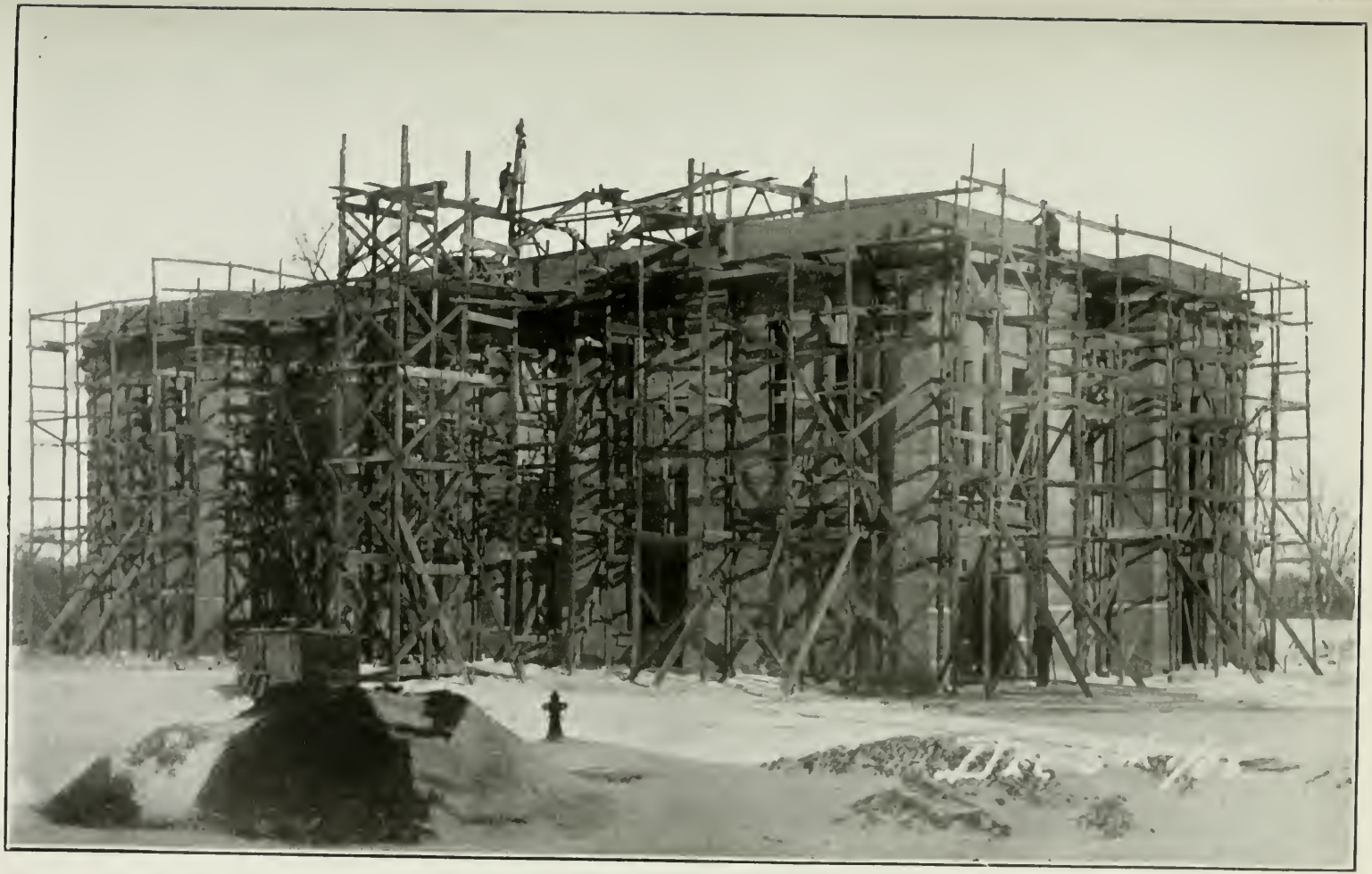
Owing to defects in the electric wiring and the attention of the Department having been drawn to same by the Fire Underwriters Association, who reported it to be in an unsatisfactory and dangerous condition, the services

of an expert were engaged to make a thorough examination. He reported that a large proportion of the wiring was what is known as concealed work; the wiring being run under the flooring and through the joists without insulation of any kind,—a method which was in vogue at the time the work was done but is now considered unsafe and therefore not permissable. He also drew attention to a number of defects in the cut-outs, sockets, cords, cleats, etc., and he particularly drew attention to the wiring and switches in the Assembly Chamber and library and condemned that part of the work entirely. He gave as his opinion that the old system could be improved to a certain extent only and would not insure the building from fire, and strongly recommended the building be wired throughout in iron or steel conduits as the removal of the present wiring would be inevitable sooner or later. It was therefore decided to install a complete new system in conduits, which would be much more satisfactory and economical than to make any further expenditure in connection with the old system. The expert acting under instructions from the department, prepared plans and specifications for an entire new plant; tenders were called for and the contract awarded to the Jas Morrison Brass Mfg. Co., of Toronto, their tender being lowest. They have satisfactorily completed the contract. The fixtures throughout have been rewired and additional fixtures supplied in library, vaults and offices, where it was found necessary to improve the lighting. The work has been carried out under the supervision of the expert, Mr. H. F. Strickland and the officials of the Department. Repairs were made as required to the heating and plumbing apparatus, including the renewing of the hot water pipes under the floor of the east half of the building, which were badly corroded. The new pipes have been laid in a trench constructed with cement and covered with cast iron floor plates. Two of the large committee rooms, on the first floor, have been painted and a number of the offices on the different floors, also the lobbies on each side of the chamber and the entrances thereto. Metallic fittings and shelving have been placed in the vaults in connection with the Lands, Forests and Mines and Provincial Secretary's Departments. New furniture has been supplied to the offices and repairs made to old furniture where necessary. The usual amount of repairs have been made to the roofs of the buildings and cleaning of snow and ice from the same has been attended to.

Osgoode Hall.

Plans and specification were prepared for an addition to the west wing, tenders were called for the erection of same and contracts awarded as follows; the lowest tender being accepted in each case,—excavators', mason and brick work and carpenter work to T. V. Gearing & Co.; steam-heating and plumbing to The Bennett & Wright Co.; electric wiring and fixtures to The Fred Armstrong Co. The building will be completed and ready for occupation in about six weeks. Appliances for fire protection including stand pipes, hose and fire extinguishers have been supplied and placed in position, the whole of the buildings are well protected from accidents that may be caused by fire. The walls and ceilings of the corridors in the north end of the old portion of the west wing have been repaired and painted. Some of the judges offices have been painted and some of the rooms in the basement—occupied by the caretakers—have been papered and painted. The stonework in the centre of the south facade of the main building which had perished on the face through the action of the weather, has been repaired by renewing the damaged stone and replacing it with new material. To give the work a uniform appearance, it was given a wash of cement paint, the desired effect having been accomp-

Addition to West Wing of Osgoode Hall—West Side.



Brockville Hospital for the Insane—Assembly Hall under Construction.

Brockville Hospital for the Insane—End View of Assembly Hall under Construction.

Solar Room, Brockville Hospital for the Insane.

lished. Repairs were also made to the stone platform and steps approaching the main entrance, the stone slabs were taken up and new foundations laid and new stone placed where required. Two 100 h.p. steam heating boilers have been installed in the boiler house, replacing old boilers condemned as being unsafe for further service. The floor of the boiler-house was lowered three feet to make room for these boilers and a portion of the coal-vault added to the boiler-house, the position of the boilers was changed from north and south to east and west. The installation of the new boilers and changing position of the old ones necessitated altering the steam connections and mains; this part of the work was done by plumbers in the employ of the Department. The boilers were supplied by the A. R. Williams Co. under contract; the brick setting and alterations being carried out by T. V. Gearing & Co. Repairs were made to the roofs and buildings generally.

Hospital for Insane, Brockville.

Plans and specifications were prepared for an assembly hall and chapel. The walls have been erected and the roof put on the building and the works closed down for the winter. The building is 110 feet long and 60 feet wide, two stories in height. The lower floor will contain accommodation for stores and a storekeeper's office, lavatories and dressing-rooms. The assembly hall is on the upper floor with ample stairways and exits, with a large stage at one end and accommodation for the clergy at the other; the seating capacity is 600. The walls are built of concrete, the roof of steel covered with slate. The work has been done mostly by Asylum labour under the supervision of a competent inspector and the officials of the Department. Operations will be resumed in the spring as soon as the weather permits.

Plans and specifications were prepared for a solar or sun-room and the work is nearly completed. This building is situated between the main building and Cottage A. on the female side, one storey and basement in height and will serve the double purpose of a solar-room and a connection between the buildings. The foundation walls are built with concrete, faced with stone above the grade line of the same kind as that in the other buildings. The upper portion is almost entirely of glass. The roof is of galvanized iron surmounted by a glass dome in the centre. The floor and walls about two feet high to glass will be covered with "Teranno" cement, which is used largely in hospitals and taking the place of tile. The work in connection with this building has also been mostly done by Asylum labour under the directions of the inspector and officials of the Department.

Hospital for Insane, Mimico.

Plans and specifications were prepared for an extension to the main boiler-house 60 x 22 feet to give much needed increased space, and to improve the lighting of this building. The building has been completed and the work, with the exception of the roofing, was done by asylum labour under the direction of the superintendent. The two new steam heating boilers installed last year in the boiler-house have been equipped with mechanical Underfeed Stokers.

Hospital for Insane, Kingston.

Plans and specifications were prepared for a new greenhouse, which has been erected by asylum labour under the supervision of the Department. The heating apparatus has yet to be installed.

Hospital for Feeble Minded, Orillia.

An extension has been built to the main boiler-house to give additional space for boilers. The plans and specifications were prepared and the work done by men employed by the Department under the supervision of a clerk of work and the officials of the Department.

Hospital for Insane, Penetanguishene.

Plans and specifications were prepared for an extension to the coal vault to main boiler-house. The building is completed with the exception of the concrete roof or driveway over same. The work being done by asylum labour under the supervision of the superintendent of the institution and the officials of the Department. Considerable work has been done to plumbing appliances and general repairs and improvements to the heating plant. A vacuum system has been installed in connection with the latter under contract by The Canadian Steam Boiler Equipment Company. The reconstruction of the old workshop for additional patients was completed and occupied early in the year. The addition to laundry was also completed early in the year, the hoist has been erected and additional machinery installed.

Hospital for Epileptics, Woodstock.

Plans and specifications were prepared for a lodge house at the main entrance to the grounds, to be occupied by the gardener, for a greenhouse and for a root house. The greenhouse and root house are completed and the lodge house is nearing completion. The work has been done by the asylum authorities, patients' labour being utilized as far as possible.

Hygienic Institute, London.

The works in connection with this building were carried on during the season ,the building has been roofed in and the heating, ventilating and electric light plants are now being installed. The contracts for heating, plumbing and ventilating were awarded to Messrs. Noble & Rich, of London, and the electric wiring to the Commercial Electric Co., of London. The building will be completed early in the coming season.

EDUCATION DEPARTMENT.

Normal and Model Schools, Toronto.

The expenditure for capital account for work done in connection with these buildings has been for ordinary repairs, relaying floors in class-rooms and corridors, painting corridors and class-rooms, reconstructing junior boys' lavatory and repairs to plumbing appliances and heating apparatus, and electric wiring. Fixtures were supplied to some of the class-rooms, wired for electric light last year. The three heating boilers were re tubed and the shells repaired. The alterations commenced last year to the Model School in connection with the ventilating apparatus were completed early in the year. The installation of the ventilating apparatus was also completed.

Hygiene Building, London.

Normal School, Peterborough.

Normal and Model Schools, Ottawa.

Contracts were awarded after tenders have been received for alterations to the Normal School to provide for a fan-room in connection with the ventilating apparatus and for a ladies' lavatory in the basement under the cloak-room, and for the installation of a ventilating apparatus in this building. The contract for the former was awarded to W. G. Adamson and the latter to Messrs. McKinley & Northwood, of Ottawa. All of the work in connection with the alterations has been completed, the ventilation apparatus is installed and will be ready for operating when arrangements are made for electric service. The plumbing and tile work in new lavatory was also done by Messrs. McKinley & Northwood, under contract. Electric light fixtures have been supplied and placed in position under contract by Messrs. Garrioch & Goddard, of Ottawa. A new hardwood floor was laid to the corridor on the ground floor of the Model School and in the kindergarten class-room. Some of the class-rooms were painted. Metallic ceilings were erected in the reception room and office in the Normal School and these rooms painted. Repairs generally to the building have been made including roofs, drains, walks, plumbing and heating appliances, etc.

Normal School, London.

Plans and specifications were prepared and tenders called for a ventilating apparatus to be installed in this building. The contract was awarded to Messrs. Noble & Rich, of London. The work has been completed and the apparatus is operating satisfactorily. To improve the draft to boilers, the chimney to the boiler-house has been raised 15 feet. The other work done at this Institution consisted of electric wiring in rooms changed last year and repairs generally.

Normal Schools, Hamilton, Stratford, Peterboro and North Bay.

The Normal Schools at Hamilton, Stratford and Peterboro were completed and opened on September 15th. The equipment was all purchased by tender, the contracts being awarded to the lowest tenderers as follows:— for desks and seats for class-rooms, The Globe Furniture Co., of Walkerville; for tables, seats and apparatus for science rooms, and tables and book-cases for the library, The Toronto and Waterloo Furniture Co.; for lockers, workbenches and cupboards for domestic science rooms and tables and seats for art rooms, gallery and lecture rooms, The Berlin Interior Hardwood Co.; for chairs for assembly hall, The Canadian Office and School Furniture Co., Preston; and for lockers in cloak-rooms, The H. A. Clemens Co., of Guelph. For plumbing in connection with domestic science and manual training, The Purdy Mansell Limited, of Toronto. Electric light fixtures have been supplied and erected under contract by the Electrical Wiring, Fixture and Supply Co., of Toronto. As considerable filling of earth had to be done around the buildings only temporary plank walks could be laid to the schools in Stratford and Peterboro; these will be removed next season when the earth has settled and walks will be laid. Permanent cement walks have been laid to the entrances at the school in Hamilton; all of the grounds have yet to be finished and sodded. The school at North Bay is nearly completed and will be fully equipped and ready for opening next season.

Institution for the Deaf and Dumb, Belleville.

Plans and specifications were prepared for a new greenhouse and tenders received. The contract for the construction of same was awarded to Thos.

Manley, of Belleville. The heating apparatus has been installed by the engineer of the Institution. The building has been completed.

Institution for the Blind, Brantford.

Plans and specifications were prepared for a new workshop for wood-working and other crafts. The tenders were called for and the contract for the erection of the building awarded to Mr. Jas. Wright, and the contract for steam-heating was awarded to Messrs. T. J. Minnes & Co., both of Brantford. The building is completed with the exception of the steam heating, which is under way, and the interior fittings. The work is being done under the supervision of the carpenter of the Institution and the officials of the Department.

Ontario Agricultural College.

The coal-house and tunnel connecting it with the main boiler-house has been completed. Plans and specifications were prepared for remodelling the main boiler-house and building an addition thereto. The space formerly occupied by the old coal vault has been added to the boiler-house to give accommodation for the large boilers, recently installed, and for additional machinery and boilers. Ample provision has been made to meet the future demands of the Institution. Tenders were called for and the contract for the construction work awarded to the H. A. Clemens Co., of Guelph. The building is completed. Two 100 h.p. steam boilers were installed in this building under contract by the Goldie & McCullough Co., of Galt. The steam connections being put in place by the engineering staff of the College. A double cottage has been erected for teamsters, a store-house for fruits and vegetables and an incubator building. The plans and specifications for same were prepared by this Department, tenders called for and contracts awarded as follows:—Double cottage, Geo. A. Scroggie; store-house, The H. A. Clemens Co.; incubator building, Geo. A. Scroggie. These buildings have all been completed. Electric light fixtures were supplied to the chemical laboratory. The above work was carried out under the supervision of the Clerk of Works and the officials of the Department. A fire-proof vault has been erected adjoining the President's office for the safe-keeping of College records, etc.

Fruit Experimental Station.

Plans and specifications were prepared for an administration building, a residence for the superintendent and a double cottage for teamsters. All of these buildings are nearing completion. The contract for the erection of the administration building was awarded to Newman Bros., of St. Catharines; the steam-heating and plumbing to The Keith & Fitzsimmons Co., of Toronto; electric wiring and fixtures to Culley & Bray, of Hamilton. The contract for the erection of the superintendent's residence was awarded to Newman Bros., the heating apparatus to The Gurney Foundry Co., of Toronto; plumbing to Mr. S. P. Gourlay, St. Catharines; electric wiring to Messrs. Crawford & Lappin, St. Catharines. The contract for double cottage for teamsters to L. R. Fretz, of St. Catharines. Plans and specifications were also prepared for a greenhouse adjoining the administration building; as the lowest tender was in excess of the amount of the appropriation, the Department decided to purchase the materials and carry on the work by day's labor, the building has been completed for the amount appropriated. The works are being carried out under a clerk of works and the officials of the Department.

Registry Office and Court House, Sudbury.

The Gaol, Fort Francis.

Districts.

Muskoka.—Repairs were made to the Court House, Gaol and Registry Office at Bracebridge and to the Court House and Lock-up at Huntsville, including painting, plumbing and repairs to roofs. A new drain has been laid to Court House and Gaol. A large amount of work was done in grading and improving the grounds to Court House and Gaol and a new fence erected on the boundary line. The work was done under the supervision of the Sheriff of the District. Furniture was supplied where necessary to the buildings in the District.

Nipissing.—General repairs were made to the Court House and Gaol at North Bay, to the Court House and Gaol at Mattawa and the Lock-ups in the District, and furniture renewed where necessary. Lock-ups have been erected at McDougall's Chute, Englehart and Cashe Bay for which grants were made in the Estimates towards the erection of same.

Parry Sound.—The addition to Gaol at Parry Sound has been completed, as also the addition to the Registry Office at that place. The work being carried on this season by the Department under a capable Clerk of works. A cement walk was laid to the Registry Office and the fence in front of the buildings was repaired. The buildings generally have been kept in good repair. Furniture has been supplied to the Registry Office, Court House and Lock-ups in the District.

The contract for the heating of Gaol was awarded to The Fred. Armstrong Co., of Toronto, the plumbing of Gaol to Messrs. McKab & McKeeney, of Parry Sound, and the heating and plumbing of Registry Office to The Wm. Beatty Co., and the electric wiring and fixtures to Mr. A. C. Poytress, of Parry Sound.

Manitoulin.—A water supply system has been installed to the Court House and Gaol at Gore Bay, connections having been made with the town's water main and plumbing appliances placed in the Court House and Gaol. General repairs have been made and furniture supplied to these buildings and to District Lock-ups.

Sudbury.—The new Court House in Sudbury is completed with the exception of the electric lighting and furnishings. The contracts awarded for the other works in the building are as follows: Heating and electric lighting, The Fred. Armstrong Co.; plumbing, Purdy, Mansell, Limited, of Toronto. The Registry Office is completed with the exception of the vault fittings and furnishings. The contracts for the heating, plumbing and electric light were also executed by the above companies. Plans and specifications were prepared and tenders called for alterations to the old Court House and upon tenders being received, the lowest was found to exceed the estimate; it was then decided to carry out the work by day labor, the Department purchasing the materials; the work has been completed within the amount of the estimate. The alterations made to this building included the erection of twelve cells in the portion of the building in which the old Court room was located. Considerable grading and filling was done to the grounds surrounding these buildings; the work being done by J. H. Carmichael, of Sudbury, under contract. It is intended to lay permanent walks and roads as soon as the weather permits. Some repairs were made to the Gaol, including the painting and papering of that portion occupied by the Gaoler. Steam heating has been installed in the Gaol, the steam being supplied from the boiler-house in the new Court House building. The heating plant in Registry Office being supplied from the same source.

Sault Ste. Marie.—The Registry Office at Sault Ste. Marie has been completed and cement walks laid to same. Repairs were made to the Gaol and Court House and to the Lock-ups, and furnishings supplied.

Rainy River.—Plans and specifications were prepared and tenders called for a new Gaol at Fort Frances and as the lowest tender was very much in excess of the estimate, the Department decided to erect the building, purchasing the materials and employing men. The services of a competent foreman were engaged with the result that the building has been completed for less than the estimated amount (including the heating and plumbing, which was done under contract) and very much less than the lowest tender. The contract for heating and plumbing was awarded to East & Corrin, of Fort Frances, after tenders had been duly received. The building is a substantial stone and brick structure with accommodation for fourteen cells and offices for the Sheriff and Gaoler, and a residence for the Gaoler,—is fitted up with modern, sanitary plumbing appliances and hot water heating. Some slight repairs were made to the Registry and Land Titles Office. Repairs were made to the Lock-ups and furniture supplied.

Thunder Bay.—Alterations have been made to the Gaol at Port Arthur to give additional cell accommodation. Plans and specifications were prepared by the Department, the contract being awarded to J. Maunder, of Port Arthur, and the contract for heating and plumbing to The Barnes Hardware Co., of the same place. The work is completed. The new Registry Office is completed. The work on this building was very much retarded through the contractors failing to carry on the contract, the Department being compelled to finish the same, employing the men and purchasing materials. Hot water heating and plumbing systems were installed by the Barnes Hardware Co., under contract. Both works were carried out under the supervision of a Clerk of Works. Repairs were made to the buildings generally and furnishings supplied.

The Lock-up at Schrieber, for which an amount was placed in the Estimates towards the erection of the building, has been erected. Repairs have been attended to and furniture supplied to the various buildings throughout the District.

Generally.

While most of the work in the Provincial Hospitals for the Insane, under the head of Repairs, exterior and interior work and requirements has been done by the Provincial Secretary's Department, the Architect of this Department has been consulted in reference to the feasibility of making proposed alterations, the work to be done, the materials to be used and the manner of carrying out the work.

The boilers and heating plants in the Provincial Buildings throughout the Province have been inspected at least twice during the year and in some cases several times by the Inspector of Boilers. All of the old machinery is inspected and repaired, and all new machinery and boilers are installed under his direction. He also inspects the heating and plumbing contracts during and after installation of the same.

All of which is respectfully submitted.

I have the honour to be, Sir,

Your obedient servant,

T. R. Heakes,
Architect.

REPORT OF THE ENGINEER.

To the Honourable J. O. Reaume,
Minister of Public Works, Ontario.

Sir,—I have the honour to submit the following report upon the works carried out by the Engineer's Branch of your Department during the year 1908.

The work comprises the erection of eleven new steel bridges, twenty-two new timber bridges, one concrete arch, extensive repairs to ten timber structures, and the maintenance of a large number of bridges requiring minor repairs. Assistance was also given to four municipalities in the erection of bridges.

Improvements were made for the safer navigation of the inland waters in the Muskoka Lakes district, Mary's and Fairy Lakes, Peninsula Lake and Magnetawan River.

Improvements in five rivers and streams were carried out by the Department with a view to prevent damage from flooding, and to provide better outlets for drainage.

Eleven drainage schemes, to which aid had been granted by the Legislature under the provisions of the Provincial Drainage Aid Act, were inspected and payment of the grants recommended.

Inspections were made for payment of subsidy of the Grand Trunk Pacific Railway, the Canadian Northern Railway, the Central Ontario Railway, and the Thessalon and Northern Railway.

Bridges, Rainy River District.

Dawson Road Bridges.—The timber structures on the Dawson Road from Port Arthur to Kaministiquia Station were renewed during the year. The bridges constructed were across Strawberry Creek, Gillies Creek, Jewel Creek, and Stony Creek; and about thirty culverts were renewed with cedar mud sills and cross pieces.

Pine River Bridges.—Five timber bridges were built over Pine River at the following points: Blackhall bridge, on the townline between Tait and Mather, 120 feet in length; Richardson bridge, on lots 6 and 7, Concession 1, Township of Richardson, forty feet in length; Township of Dilke, sections 34 and 35, bridge 300 feet in length: Nelles Township South, sections 13 and 18, bridge 110 feet in length; Nelles Township North, section 13 and 18, bridge 100 feet in length. Tenders were asked by posters distributed throughout the district and a contract was awarded to Mr. W. H. Loughhead, of Emo, whose tender was the lowest. The work was completed in a most satisfactory manner. The bridges were built of pine, cedar, and tamarac on pile bents.

Slate River Bridge.—Repairs were made to the bridge across the Kaministiqua River at Slate River. A broken chord was renewed, planking repaired, a pier filled with stone, and the approach graded, at a cost of $580.14. This bridge will require to be entirely rebuilt in a year or two. The work was done in a satisfactory manner by Mr. Duncan Gillespie, under the direction of Mr. John McNee.

Algoma District Bridges.

Spanish River Bridge, Massey.—The steel bridge across the Spanish River at Massey, described in the report of last year, was completed and opened for traffic in the month of July. The bridge consists of one span, 128 feet in length, four spans 105 feet in lngth, a steel trestle approach on the south end sixty feet in length, and steel trestle approach on the north end forty feet.

The substructure is substantially built of concrete and was completed in the previous season by workmen employed by the Department under the supervision of Mr. Alex. Tourongeau, Superintendent of Bridges, at a cost of $14,000. The superstructure was erected by Dickson Bros., of Campbellford, at a cost, including steel trestle approaches, of $14,832.30. This structure is much appreciated by the settlers in the district south of Massey, who were compelled to use a scow ferry until the erection of the bridge.

Espanola Bridge.—The steel superstructure of the bridge over the Spanish River at Espanola, the foundations for which were completed during the previous season, was erected and opened for traffic early in September. The bridge consists of two spans 120 feet in length and 14 feet clear width, constructed of steel and having a concrete floor. The approach to the north is formed by excavating from the side of the hill and filling against a substantial concrete abutment. The approach from the south is formed by timber trestles for a distance of 88 feet. The substructure was erected and grading of approaches was done by men employed by the Department under the direction of Mr. J. O. Coates, at a cost of $9,384.23. The superstructure was erected by Dickson Bros., of Campbellford, at a cost of $8,400.

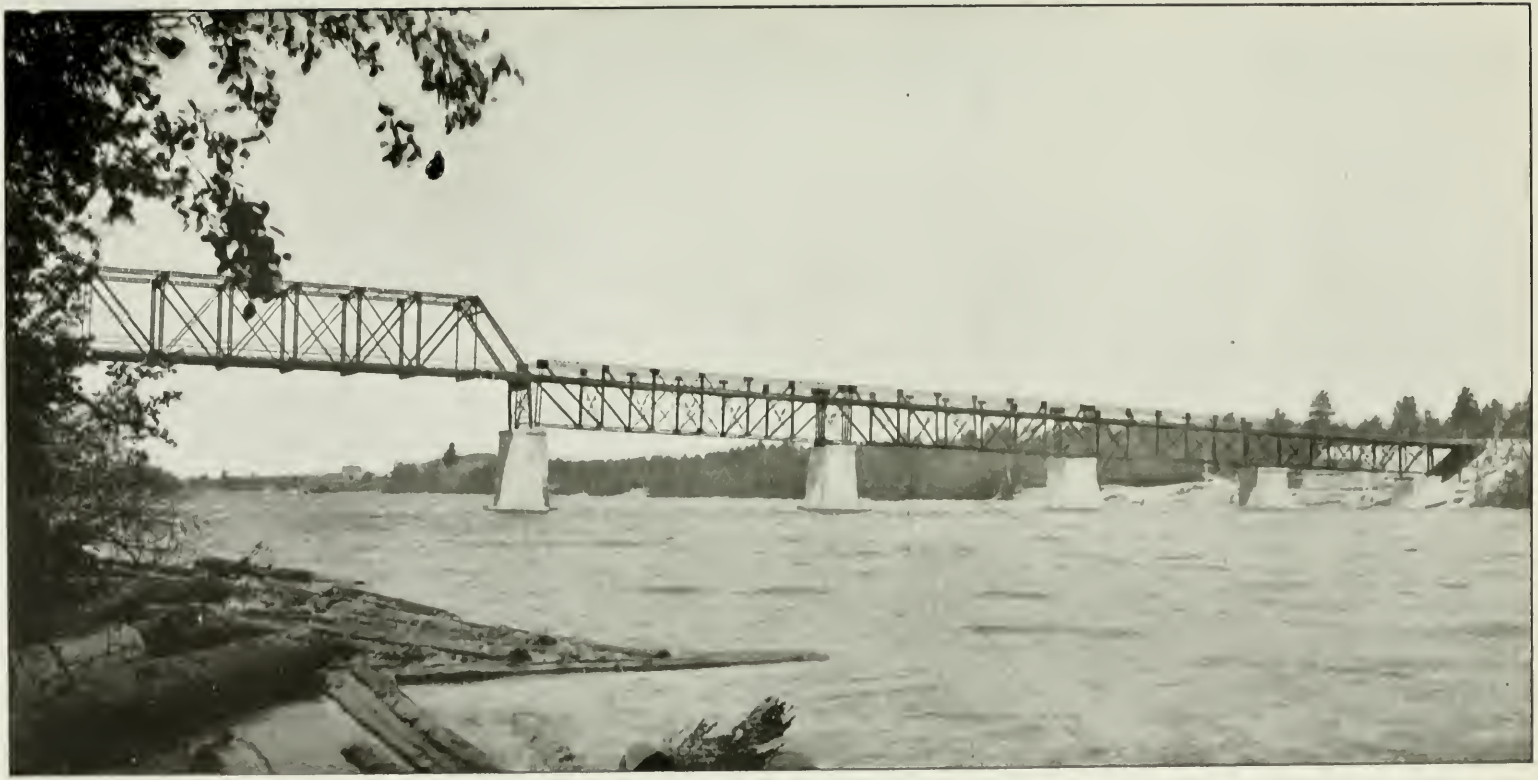
Mississauga River Bridge.—A substantial steel structure, consisting of three spans 120 feet in length each, was erected across the Mississauga River, near the line between Sections 8 and 9, Township of Thompson. The substructure consists of two substantial concrete abutments and two concrete piers 22 feet 3 inches in height above low water. An earth and stone filling, 220 feet in length and 14 feet in height, is constructed at the northerly end of the bridge. The superstructure, consisting of three spans 120 feet in length and 14 feet in width, was supplied and erected by the Algoma Steel Bridge Company, of Sault Ste. Marie, the contract price being $11,160. The substructure was built by men employed by the Department under the supervision of Mr. Alex. Tourangeau, Superintendent of Bridges.

Iron Bridge, Mississauga River.—An appropriation of $600 for refloor-ing this bridge was granted, and the money was expended in covering the bridge with three-inch plank, and shortening the flooring of bridge by filling in portions of approaches at each end. The total length of bridge and approaches is 285 feet.

Wings' Bridge.—Repairs were made to a bridge over the Thessalon River in the Township of Aberdeen, known as Wings' Bridge, at a cost of $149.40, chargeable to Maintenance account.

McLeod's Bridge.—Repairs were made to a bridge known as McLeod's Bridge, Township of Leaburn, at a cost of $92.95, chargeable to Maintenance.

Miller's Bridge.—Across the Thessalon River, Township of Plumber, was repaired at a cost of $172.36, chargeable to Maintenance. The work consisted of driving thirteen new piles, coping and bracing for same, renewing abutments, putting in four new stringers, new flooring, and grading approach.



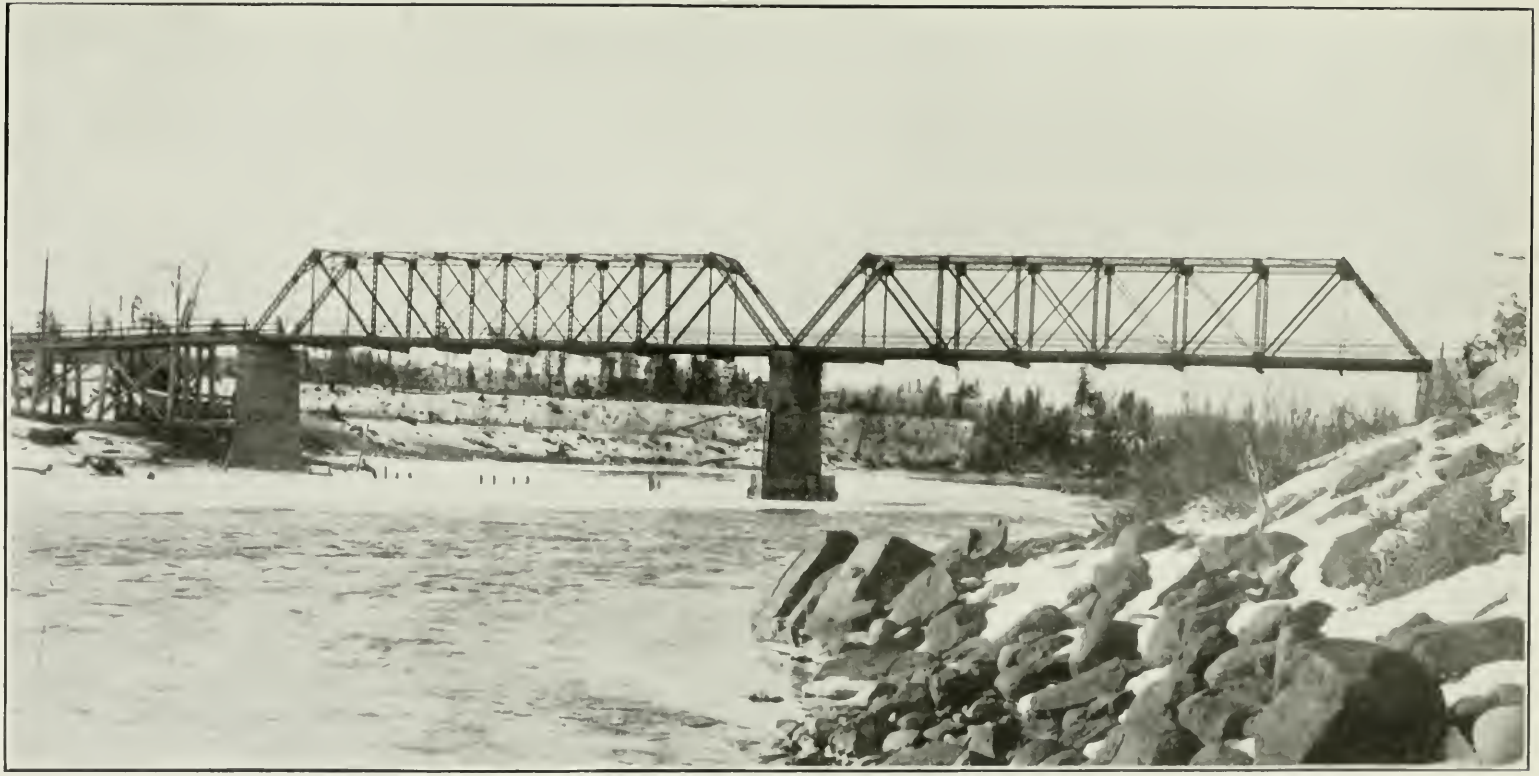
Spanish River Bridge, Massey.

Spanish River Bridge, Massey.

Spanish River Bridge, Massey.

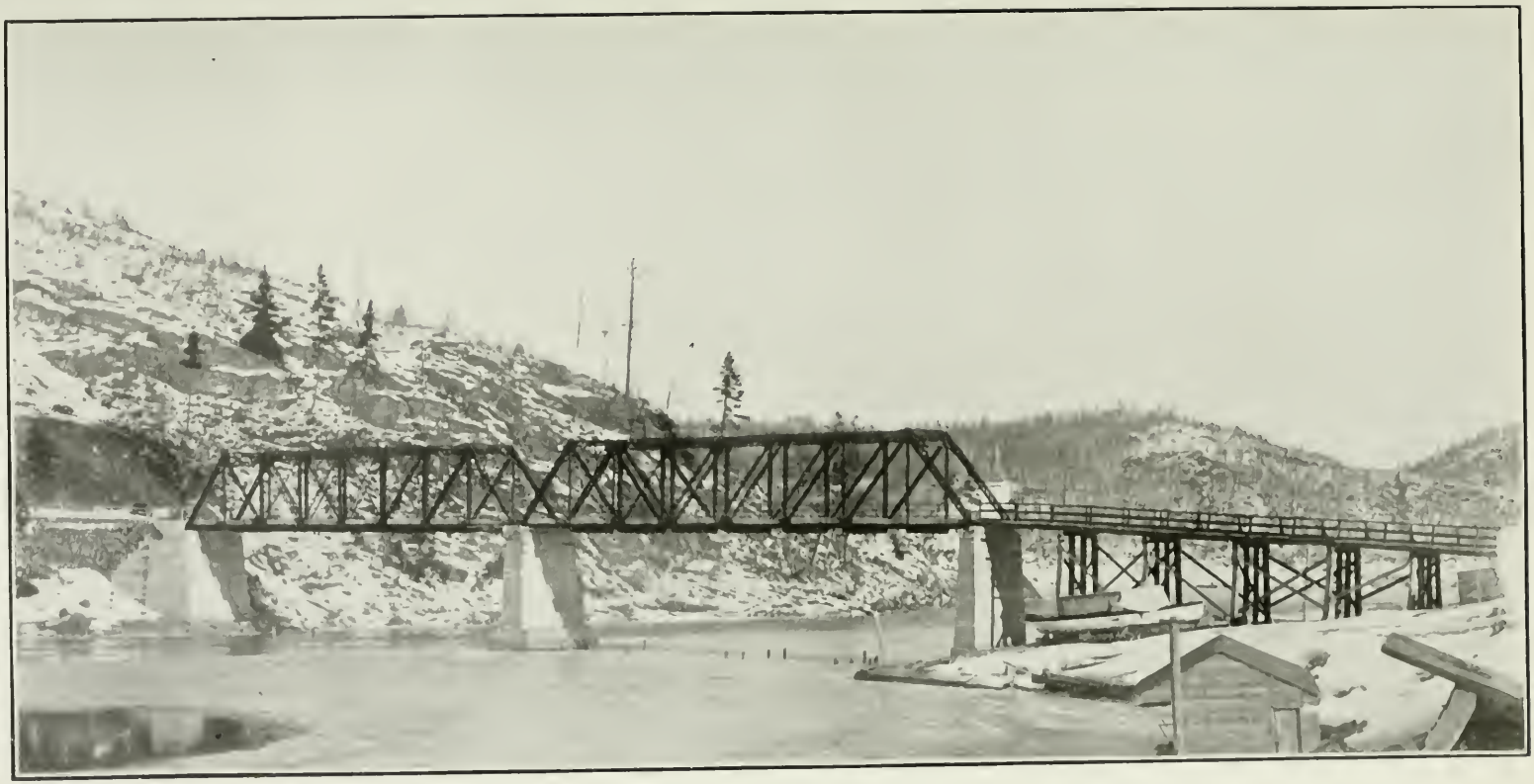
Spanish River Bridge, Massey.

Spanish River Bridge, Espanola.

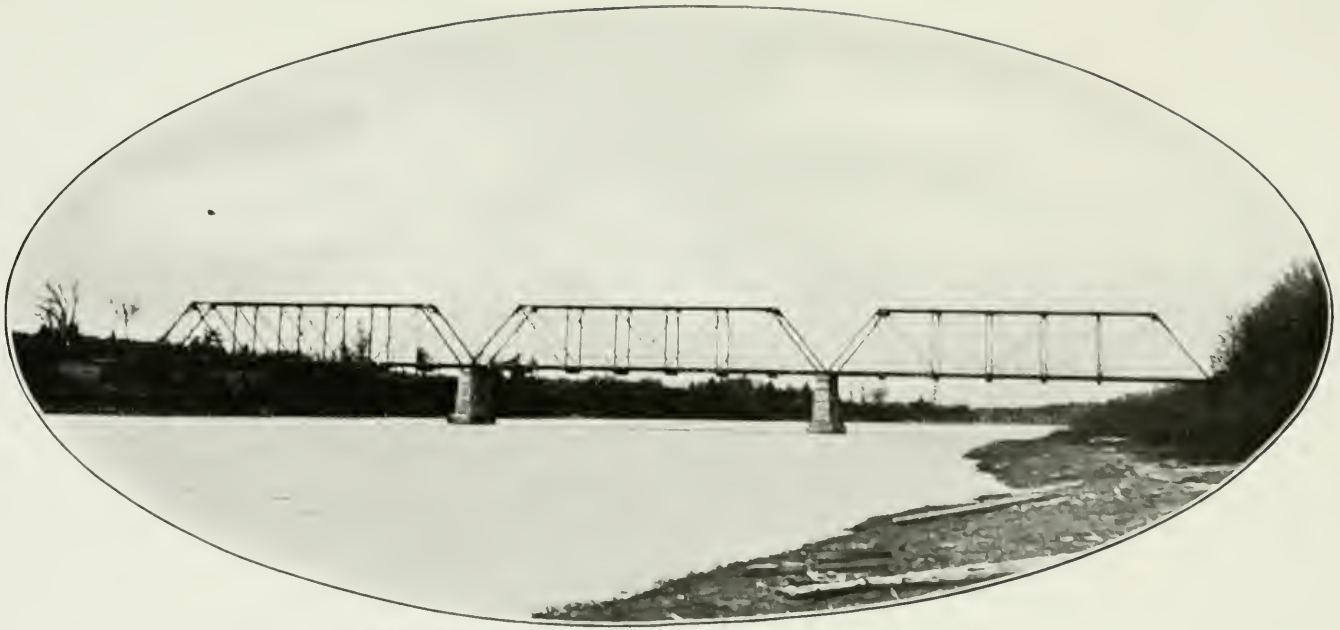


Spanish River Bridge, Espanola.

Spanish River Bridge, Espanola.

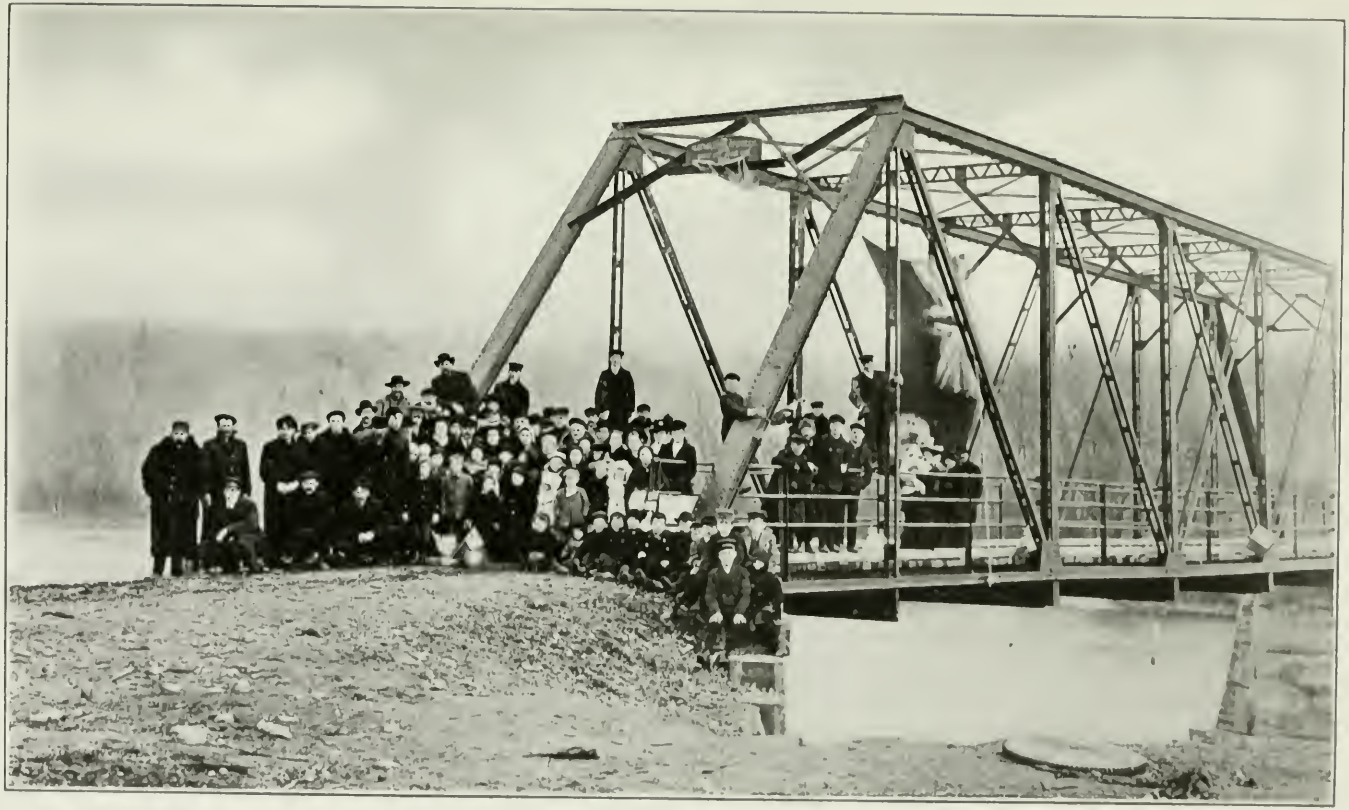


Spanish River Bridge, Espanola.



Mississauga River Bridge, Thompson Township, near Dean Lake.

Mississauga River Bridge, Thompson Township, near Dean Lake.



Opening of Mississauga River Bridge, near Dean Lake.

Opening of Mississauga River Bridge, near Dean Lake.

Pautois Creek Bridge, Township of Calvin.

Pautois Creek Bridge, Township of Calvin.

Montgomery Bridge.—Across the Thessalon River in the Township of McMahon, was repaired at a cost of $281.17, chargeable to Maintenance. The main span is 50 feet and end spans 25 and 32 feet respectively. The work consisted of new bottom chords and stringers, new needle beams, new flooring and rails, and grading approaches.

McLarty's Bridge.—Across the Thessalon River at the outlet of Gordon Lake was repaired at a cost of $590.72, charged to Maintenance. The bridge was reduced in length from 130 feet to 91 feet, and consists of four spans 19, 20, 34 and 18 feet in length respectively.

Clear Water Creek Bridge.—In the Township of Meredith, was repaired at a cost of $100.21, chargeable to maintenance. The bridge has a span of 16 feet, and is constructed of cedar timber. The hills on each end were cut down and approaches filled.

White River Bridge, Bell's Rapids.—Repairs were made to the bridge across White River at Bell's Rapids, in Parkinson Township. The current had undermined the approach, and south abutment had settled. The damage was repaired at a cost of $44.24, chargeable to maintenance.

Nipissing District Bridges.

Veuve River Bridge.—A timber bridge on pile foundation was erected over the Veuve River, on concession 4, Township of Kirkpatrick. The bridge is 120 feet long and 12 feet high above low water, and has a span in centre 30 feet in clear width, two spans 25 feet, and two spans 19 feet in clear width. The centre span has five lines of stringers of 12-inch flatted pine. The other spans have four lines. The floor is of 3-inch pine planking 14 feet in width. The work was done by men employed by the Department at a cost of $541.06.

Filliatrault Bridge—A timber bridge on pile foundation was built on the boundary between Martland and Cosby Townships. The bridge is 240 feet long and 7 feet 6 inches high above the water. There are fourteen spans supported on pile bents, four piles in each bent; there are four lines of stringers 10-inch flatted, covered with 3-inch pine planking, 16 feet wide. The bridge is provided with strong railing and was built by workmen employed by the Department at a cost of $700.

West Arm Lake Nipissing Bridge.—The work on the bridge across the north-west arm Lake Nipissing, on lot No. 1, con. 3, Township of McPherson, was continued early in the year, a bridge on pile foundation having been constructed and the approaches filled with stone, 24 feet in width and from 4 to 8 feet in height,—making a total length of bridge and approaches of 1,325 feet. Two bridges over the north-west arm, on the boundary between Haddo and Cherryman Townships were raised and repaired where injured by the lumber companies in driving their logs.

Pautois Creek Bridge.—A steel bridge with concrete floor was erected across Pautois Creek in the Township of Calvin. The bridge has a clear span of 22 feet, and is 14 feet wide in the clear. The steel work, including the railing and steel fabric for reinforcing the concrete floor was furnished and erected by the Hamilton Bridge Works Company, of Hamilton, at a cost of $609.50. The approaches are filled with stone and earth and are 80 feet in length and 10 feet in height. The concrete abutments, concrete flooring, and filling of approaches were done by men employed by the Department at a cost of $1,763.30.

Smoky Falls Bridge, Sturgeon River.—Repairs were made to the bridge over the Sturgeon River at Smoky Falls at a cost of $102.24. Chargeable to

maintenance account. New stringers and covering were supplied to south approach, a new pier filled with stone was built to protect the bank from washing away on the north end, and the railing at both ends repaired.

Lessard Bridge, Veuve River.—Repairs were made to a bridge over the Veuve River on the boundary between the Townships of Springer and Caldwell, known as the Lessard Bridge, at a cost of $271.87. Chargeable to Maintenance.

Vermillion River Bridge.—Repairs were made to a bridge over the Vermillion River, between lots 10 and 11, concession 5, Township of Hanmer, at a cost of $196.25,—chargeable to maintenance. The piers were raised two feet and filled with stone, and new stringers and covering provided.

Temiskaming District Bridges.

White River Bridge, Township of Marter.—A timber bridge was erected on the White River on the south boundary of Marter, consisting of two spans of 60 feet each, with a trestle approach 40 feet in length on the east end and 20 feet at the west end. The materials had been delivered in the latter part of the year 1907, and the erection was completed early in the month of March. The work was done by workmen employed by the Department. The total cost of the work was $3,285.45.

White River Bridge, Pacaud Township.—Work was in progress in the erection of a bridge over the White River on lot No. 2 on the south boundary of Pacaud Township, at the close of the year 1907. The bridge consisted of one span of 60 feet, and timber approaches 17 feet 6 inches at each end. The work was completed early in the month of May. The cost of the bridge was $2,198.23.

Englehart Bridge.—A timber bridge was built over the south branch of White River on the south half of lot No. 10, concession 5, Township of Evanturel. The structure consisted of one span 60 feet in width in the clear, supported on two abutments 8 feet in width, and pile trestle approaches 68 feet in length, making the floor of the bridge 144 feet in length.

The work on the structure was done in a very satisfactory manner by Wm. Pollock & Sons, of Englehart, for the sum of $2,461.92, their tender being the lowest. The grading of the earth approaches was done by men employed by the Department, the total cost being $2,795.49.

Hilliardton Bridge.—A timber bridge was erected across the White River on side road between lots 8 and 9, concession No. 3, of the Township of Hilliardton. The bridge consists of one central span 60 feet in width in the clear, and two spans 40 feet in width in the clear, each supported on two piers 9 feet in width each, and two abutments 5 feet in width each, and pile trestle approaches six spans of 17 feet each, making the total length of floor 270 feet.

As the White River is navigable at this point, the bridge was built giving 30 feet in clear height above the summer level of the river.

The work on the structure was completed in a satisfactory manner by Mr. C. A. Foster, contractor, of Haileybury, for the sum of $4,400, his tender being the lowest. After the completion of the structure a land slip occurred on the northerly end, which injured the northerly approach and abutment; to which repairs were made at a small cost. The earth filling of approaches was done by men employed by the Department at a cost of $1,060.89, making the total cost of the bridge $5,460.89.

La Blanche River Bridge, Casey Township.—A timber bridge was erected across La Blanche River, between lots 6 and 7, concession five, Township of Casey, at a point known as Pearson's Landing. The bridge consisted of three spans 60 feet in clear width, supported on two piers 8 feet in width, and two abutments 12 feet in width, with pile trestle approaches 107 feet in length, making the length of flooring 327 feet. The river being navigable at this point, it was necessary to erect the bridge, giving 30 feet in clear height above the summer level of the river. A contract was awarded to Messrs. Sinclair & Smith, of New Liskeard, for the sum of $4,922.85, their tender being the lowest; the work was completed in a satisfactory manner by the contractor. The grading of the roadway approaching bridge was done by men employed by the Department at a cost of $894.87, making the total cost of the work $5,817.72.

Bridge on Townline between Dymond and Harris.—A pile trestle bridge consisting of eight spans 17 feet each, was erected across a ravine on the third concession on the townline between the Townships of Dymond and Harris, the total length of floor being 137 feet. The work was done by workmen employed by the Department at a cost of $911.28.

Round Lake Road Bridges.—Good strong bridges on pile bents have been erected across six large ravines on the Round Lake Road at the following places: Between lots 2 and 3, con. 6, Township of Chamberlain, one bridge 171 feet long and 31 feet high, and another bridge 66 feet long and 11 feet 6 inches high. On the townline between Chamberlain and Pacaud, three bridges on lot No. 4, 92 feet long and sixteen feet six inches high, 167 feet long, 21 feet 6 inches high, and 105 feet long, 20 feet 6 inches high respectively. On the townline between Chamberlain and Pacaud, lot No. 5, one bridge 162 feet long 18 feet high.

Hudson Creek Bridge, Township of Kearns.—In the month of June last, bush fires destroyed five bridges on the road between lots 4 and 5 in the third concession of the Township of Kearns. The township at once, at a large expense, set about making permanent filling at four of the ravines, where substantial cedar culverts were able to carry the flow of the water. One large ravine remained to be provided with a crossing, and in view of the large expense to which this township had been put, owing to the burning of these bridges and the permanent character of the work done by it, the Government, by a special warrant, undertook to supply a steel structure having a span of 40 feet in the centre and two spans 20 feet each, at a cost of $1,800. The filling of the balance of the ravine, which was 275 feet in length, was undertaken by the township. A contract was awarded to the Ontario Bridge Company for the steel at the sum of $1,498. The concrete piers were built by men employed by the Department at a cost of $294.94.

Parry Sound District Bridges.

Kearney Bridge.—The work of grading the approaches to the bridge over the Magnetawan River at Kearney, described in report of 1907, was completed early in the year. A concrete floor and sidewalk was laid as soon as the weather permitted the work to be safely done. These works were done by workmen employed by the Department under the direction of the Superintendent of Public Works.

Magnetawan River Bridge, Burk's Falls.— A new steel bridge, 69 feet in length, on concrete abutments, was built over the Magnetawan River on High Street, in the Town of Burk's Falls, to replace a timber structure that had collapsed. The superstructure was supplied and erected by Messrs.

Jenks and Dresser of Sarnia, for the sum of $1,395.00, whose tender was the lowest. The concrete substructure was built by workmen employed by the Department at a cost of $1,205.18, under the supervision of Mr. Alex. Tourongeau, Superintendent of Bridges.

Shadow River Bridge.—A pile trestle bridge of five spans, 20 feet each, was erected across the Shadow River near Rousseau, in the Township of Humphrey. The bridge has a clear headroom of six feet above high water for the accommodation of small boats and gasoline launches. The approaches were made of stone covered with gravel. The work was done by workmen employed by the Department under the direction of Mr. D. H. McIntosh, foreman of bridges, at a cost of $490.90.

Whitestone Lake Bridge.—A timber bridge 72 feet in length was erected across the Narrows of Whitestone Lake at Dunchurch, on the North Road. The north span is 36 feet in the clear, to admit the passage of logs. A span 12 feet in width, with a movable floor, is provided to allow small steamboats to pass. The bridge is supported on three timber piers, 7 feet wide and 14 feet long, filled with stone, 6 feet, 14 feet and 11 feet in height respectively. The work was done by workmen employed by the Department under the direction of Mr. D. H. McIntosh, at a cost of $706.40.

Steidtler Creek Bridge.—A timber bridge 170 feet in length was constructed across Steidtler Creek, on Lot No. 5, concession 5, Township of Hagerman. The bridge consists of one 50 foot span and six 20 foot spans on pile foundations. The approaches are built of timber, stone and gravel. The bridge was raised about 5 feet higher than the old structure to avoid the steep grades at each end.

The work was done by workmen under the direction of Mr. D. H. McIntosh at a cost of $954.47.

Commanda Creek Bridge.—Repairs, chargeable to maintenance, were made to a bridge over Commanda Creek, on the Golden Valley and McConkey road. The bridge has a length of 82 feet and a width of 14 feet. The flooring was renewed with three inch planking, and railing repaired.

Trout Creek Bridges.—Several bridges on the road between concessions 2 and 3 in the Township of Himsworth, were injured by bush fires in the early part of October, making it impossible for the settlers to reach their market. Repairs were made to them as follows: On lot 12, a bridge 40 feet long was filled in with round timbers and covered with gravel, also on lot 12 a bridge 35 feet long, built of round timber, leaving a 10 foot waterway in centre; one on lot 13 and one on lot 14 across two ravines, 30 feet long and 7 feet high each, built of solid timbers and covered with gravel; also on lot 14, a bridge 150 feet in length up the side of a steep hill, built of cedar and gravelled; on lot 15, a bridge, seventy feet in length, stringers laid on soft bottom covered with round timber and gravelled; on lot 16, a bridge 40 feet long, with two spans centre pier four feet high, stringers of cedar, and gravelled. Five small culverts were also renewed.

The work was done under the direction of Mr. D. H. McIntosh, at a cost of $253.84, chargeable to maintenance.

South River Bridge, Powassan.—Extensive repairs were made to a bridge over the South River on the 20th Sideroad, Township of Himsworth. This bridge is 172 feet in length, consisting of eight 20 foot and one 12 foot spans on pile bents. The cost of the work was $842.79, and was done by workmen employed by the Department under the direction of Mr. D. H. McIntosh.

Oakley Bridge, Muskoka River, Fraserburg.

Muskoka District Bridges.

Big East River, Chaffey Township.—A new steel bridge, 80 feet in length supported on concrete abutments, was erected across Big East River on the North Road, Township of Chaffey. The steel work was supplied and erected by the Hamilton Bridge Works Company, the contract price being $2,160.00.

The work on abutments and approaches was done by men employed by the Department, under the direction of Mr. J. O. Coates. The abutments are 20 feet in length and 18 feet in height; 5 feet 6 inches wide at the bottom, and 2 feet 6 inches wide under the copping; the wing walls on the north abutment are 14 feet in length and on the south abutment 12 feet. The foundations were consolidated by driving 32 piles under each abutment. The approaches, 24 feet in length on the north end and 68 feet on south end, are filled with earth and gravel. The cost of abutments and approach was $3,236.00.

Oakley Bridge.—A new steel bridge, having one span 70 feet in length and one span 38 feet in length, supported on concrete piers and abutments was erected over the south branch of the Muskoka River on the Townline between the Townships of Oakley and McLean. The steel work was supplied and erected by the Hamilton Bridg Works Company, the contract price being $2,100.00. The work on pier, abutments and approaches, was done by men employed by the Department under the direction of Mr. J. O. Coates. The south abutment was built on solid rock, 19 feet long and 17 feet high, with wing walls 12 feet 6 inches long. The centre pier was supported on the old crib, which was taken down to extreme low water, the new concrete was 18 feet long and 14 feet high. The foundation of north abutment was consolidated by driving 25 (twenty-five) piles. The abutment is 19 feet long and 16 feet high with wing walls 9 feet in length. The approaches, 36 feet long on the north end and 40 feet on the south end, are filled with rock, earth and gravel. The cost of abutments and approaches was $2,515.03.

Dorset Bridge.—A new steel bridge is nearly completed across a bay of Lake of Bays at the Village of Dorset, on the line between the Townships of Ridout and Sherbourne, Districts of Muskoka and Haliburton. The bridge consists of a central span of 80 feet, and two spans of 33 feet 6 inches. The central span is raised high enough to permit the passage of small launches and scows, the clear height at summer level being 11 feet. The substructure consists of two concrete piers 25 feet in length, 5 feet wide at the base, 3 feet wide at the top, and 19 feet and 17 feet 6 inches in height respectively and two concrete shore piers 25 feet long and 4 feet 2½ inches wide at the base, 2 feet 3 inches wide at the top, and 13 feet and 15 feet in height respectively. Concrete wing walls have been constructed at the southerly end, 50 feet in length, to retain filling of the approach and afford access to the business places on each side of the street and to the wharf. The substructure is completed and steel delivered and work of erection is under way.

The steel superstructure is being supplied and erected by the Western Bridge and Equipment Company, the contract price being $3,480.00. The substructure was built by men in the employ of the Department under the direction of Mr. J. O. Coates, at a cost of $3,675.79.

Stephenson Float Bridge.—A floating bridge, 650 feet in length, in the Township of Stephenson, was renewed. Five lines of pine stringers 3 inches x 4 inches were laid on top of the old bridge and covered with tamarac plank 3 inches in thickness. New railing was provided of 4 inches x 4

inches uprights, 4 inches x 4 inches top rail, 3 inches x 4 inches centre rail, and 2 inches x 6 inches braces. Cedar stringers were provided for the approaches.

Good substantial work has been done at a cost of $808.15. The work was done by workmen employed by the Department under the supervision of Mr. William Lowe, Inspector of Colonization Roads.

Huntsville Bridge.—A retaining wall was built on the north side of the street at the west end of the swing bridge in the town of Huntsville. The wall is substantially built of stone laid in cement mortar on cement concrete footings, 1 foot 6 inches in thickness and 4 feet 6 inches wide. The wall is 169 feet in length and is a substantial and permanent finish to the approach of the bridge. The cost of the work was $663.57. This work was done under the direction of Mr. William Lowe, Inspector Colonization Roads.

Black Creek Bridge, Township of Stisted.—A bridge known as the Black Creek bridge, in the Township of Stisted was rebuilt. The old wooden abutments were replaced with stone laid in cement mortar, the abutments being made 4 feet wide at the bottom, 2 feet at top, and 8 feet high.

The bridge is 14 feet wide with five good, strong tamarac stringers covered with 3 inch plank. The span has been reduced to 26 feet, and the approaches filled with stone and sand. The work is substantially done at a cost of $151.95, charged to maintenance account.

Victoria and Haliburton Bridges.

Somerville Bridge, Burnt River.—A new steel bridge was erected across the Burnt River on lot 12 in the 5th con., Somerville Township, on the Kinmount Road near Burnt River Station. The bridge has a span of 73 feet 6 inches, and is 14 feet in clear width. The substructure is built of heavy concrete abutments with stone wing walls built in cement mortar.

The steel superstructure was erected by the Western Bridge and Equipment Company of Chatham, the contract price being $1,668.00. The substructure was built by workmen employed by the Department under the direction of Mr. Wm. Kennedy, Superintendent of Public Works.

Norland Bridge.—The old wooden structure known as the Norland bridge on Cameron Road was replaced by a concrete arch having a clear span of 8 feet and a length of 34 feet, with four wing walls 5 feet 6 inches in length each. The approaches were filled with earth and stone, and gravelled on the surface. The length of the filling was 130 feet and average height 9 feet. The foundation for the arch was consolidated by driving piles.

The work was done by workmen employed by the Department under the direction of Mr. William Kennedy, Superintendent of Public Works, the total cost being $1,288.34.

Bushkong Lake Bridge, Peterson Road.—The old bridge at Bushkong Lake on Peterson Road, was a very long timber structure. By a slight deviation in the course it has been shortened by making a permanent filling 448 feet in length,—78 feet has been renewed on a curve connecting the new filling with the present spans, which will require renewal in five or six years. These spans are 38 feet and 72 feet in length. This work was done by workmen employed by the Department under the supervision of Mr. John Bailey, Inspctor of Colonization Roads for the District. The total cost of the work was $957.76.

Renfrew County Bridges.

Palmers Rapids Bridge.—A new steel bridge was built across the Madawaska River, a short distance below Palmers Rapids. An old timber bridge owned by private parties had formerly been used by the public, but had become so badly decayed that it was not safe for traffic.

The new bridge consists of two spans 73 feet 6 inches in length each, supported on timber cribwork abutments and pier. The steel superstructure was supplied and erected by the Hamilton Bridge Works Company, the contract price being $2,710.00. The substructure and approaches were constructed by workmen employed by the Department under the directions of Mr. William Kennedy, Superintendent of Public Works, at a cost of $1,908.71.

Bells Rapids Bridge.—A timber structure was built over the Madawaska River at Bells Rapids. Work was commenced on this structure in the year 1907, under Mr. Cornelius O'Grady as foreman, who was instructed to prepare the timber required for the erection of the bridge. The work was completed by workmen employed by the Department under the supervision of Mr. William Kennedy, Superintendent of Public Works. The bridge has a length of 517 feet, and is supported on thirteen cribwork piers, filled with stone, and four trestle bents. Total cost of the work was $2,209.38.

Culls Bridge, Barry's Bay and Calabogie Bridges.—A new timber bridge known as Culls Bridge was built on lot No. 26, con. 8, township of Admaston. This bridge was built of cedar 50 feet in length, and the approaches were filled with stone, about 75 cords in all. The cost of the work was $299.37. The work on Barry's Bay Bridge, situated in the Townshijp of Hagarty, on lot 23, con. 4, consisted of building retaining walls, side railing and filling up a deep gully—in all 350 feet in length, with an average depth of 14 feet. The cost of this work was $311.50.

The approaches to the steel bridge at Calabogie have been built of dry stone work 28 feet in length at each end. The filling is 22 feet wide at the base and average 7 feet in height. The cost of this work was $320.61. The work on these bridges was done under the direction of Mr. H. N. Moss, Inspector of Colonization Roads for the District.

Beeline Bridge.—A timber bridge 130 feet long and 14 feet wide was built over the Indian River on lot No. 30, con. 6, Township of Alice. The bridge consists of three spans, the centre span being 45 feet in length, the two side spans 25 feet each. It is supported on two cedar piers and two abutments. The cost of the work was $499.63.

Round Lake Road, Township of Hagarty.—A grant of $600.00 was paid to the Treasurer of the Township of Hagarty towards the construction of a bridge known as the Round Lake Road bridge. The bridge crosses the Bonnechere River, where it enters Round Lake in the Township of Richard, municipality of Hagarty. The bridge is some 222 feet long and 18 feet wide, with cedar covering averaging 8 inches in diameter. It is supported on five piers, 12 feet x 12 feet, and 12 feet high.

The bridge was inspected by Mr. H. N. Moss, Inspector Colonization Roads, who reported that a good, strong, substantial bridge had been built, the material being all new cedar timber.

Bonnechere River Bridge, Township of Horton.—A grant of $1,000.00 was paid to the Treasurer of the Township of Horton towards the construction of a bridge over the Bonnechere River in the Township of Horton. Mr. H. N. Moss, Inspector Colonization Roads, reported that he had examined the bridge and found it completed in a permanent manner, with

steel superstructure on concrete foundations. The cost of the steel superstructure was $3,250.00; concrete work, filling approaches, engineering, etc., $5,754.00; or a total cost of $9,004.00.

Hastings County Bridges.

York Branch Bridge.—A new bridge was built across the York Branch River on lot No. 12, concession 11, Township of Dungannon. The bridge has a length of 150 feet, and consists of one central span of steel 58 feet 6 inches in length, and two spans of cedar timber trusses, 35 and 40 feet in length respectively. The bridge is supported on four piers of cedar timber 10 feet x 18 feet, and 16 feet in height. The steel central span was supplied and erected by The Dickson Bridge Works Company, of Campbellford, the contract price being $946.00. The foundation and approach spans were built by workmen employed by the Department, under the supervision of Mr. T. C. McConnell, Inspector of Colonization Roads, at a cost of $964.31.

Mud Creek Bridge, Township of Herschell.—A timber bridge 100 feet in length, built on pile bents, was erected over Mud Creek on the 3rd concession of the Township of Herschell near Mud Creek Station, on the Irondale, Bancroft and Ottawa Railway. The approaches, 332 feet in length at one end, and 163 feet at the other end, with an average depth of 8 feet, were filled with earth and gravel, the bottom, below the water line, being filled with pine logs. A substantial railing was provided along the whole length of the bridge and approaches. The work was carried out by Mr. Wm. Mulcahy under contract for the sum of $1,800.00.

Sherbineau Bridge.—A grant of $500.00 was paid to the Treasurer of the Township of Hungerford towards the cost of a bridge over the Clare River, on lot 23, concession 10, Township of Hungerford. It consists of one span 50 feet in length, constructed of steel, with a reinforced concrete floor, 16 feet in width. It is supported on substantial concrete abutments 11 feet 6 inches in height. The west approach is filled with stone, having a length of 30 feet and an average depth of 8 feet; the east approach has a timber span 28 feet in length. The bridge was inspected by T. C. McConnell who reported that the work was done in a substantial and creditable manner.

A certified statement of the cost of the work by the Township Treasurer shows an expenditure of $1,782.00.

Ardoch Bridge, County of Frontenac.

A new bridge was erected across the Mississippi River, on lot No. 20, S.W.R. Township of Clarendon, known as the Ardoch bridge. The old timber structure had a length of 160 feet. In rebuilding, this was reduced to one span of 35 feet, built on two piers, of good stone set in cement mortar. The approach on one side, 120 feet in length, has an average depth of from 6 to 12 feet, and on the north side, 61 feet in length, has a depth of thirteen feet. This is a strong and well built bridge.

Clear Creek Bridge, County of Kent.

A grant of $500.00 was paid to the treasurer of the Township of Orford towards the construction of a bridge on St. Andrews Road near Lake Erie, in the Township of Orford. This bridge is used exclusively by fishermen on Lake Erie. The bridge was built in a permanent manner, being a cement concrete arch 12 feet in width, 15 feet in height, and 17 feet in length, with

parapet and wing walls, 64 feet long and 22 feet high. The cost of the work was about $1,400.00. It was inspected by Mr. A. J. Halford, an engineer of the Department, who reported that the work as done in a satisfactory manner.

Muskoka Lakes Works.

Improving Kemps Channel.—Early in the season, the work at Kemps Channel, between Bala Park and Acton Island, was resumed, and was carried on from February 24th to May 23rd, when the dredging equipment was required at other points on the lakes. The sum of $1,465.04 was expended in blasting and removal of rock.

Piers, Jeannettes Channel.—The Muskoka Navigation Company complained of a cross current in Jeannettes Channel. To remedy this and make the navigation of the channel, which at times of high water has a very strong current, absolutely safe, the spaces between the pivot pier and two guard piers of the Canadian Northern Railway Swing bridge, were filled with cribwork, thus cutting off the danger from the cross current. The cost of this work was $1,580.94.

Port Sandfield.—The entrance to the canal from Lake Joseph was deepened and widened to give better access to the canal by the large boats of the Navigation Company, which had some difficulty in keeping the channel in times of high winds when slowed down to enter the canal.

Port Carling Lock Grounds.—Considerable work was done in grading and sodding the grounds at Port Carling Lock. A Siche Gas Lighting Plant was installed, which made a decided improvement in lighting over the old coal oil lamps, and consequently removed a source of danger to the public. The Navigation Company erected a neat and attractive building as a waiting room and storehouse, which has added much to the appearance of the place.

Dredging Channel to New Wharf, Bracebridge.—The dredging equipment and crew were loaned to the Department of Public Works, Canada, from the 14th of August to the 3rd of December, to enable them to provide a channel to the wharf erected by them in the town of Bracebridge. This wharf was located farther up the river than the old wharf of the Muskoka Navigation Company.

The dredge was returned to the Department of Public Works on the date mentioned above, and has been taken to Gravenhurst for the winter.

Mary's and Fairy Lakes Works.

The swing bridge above the Mary's and Fairy Lakes Lock was renewed early in the season at a cost of $977.10, chargeable to maintenance account. The cribwork, piers and glance booms at Mary's and Fairy Lakes Lock were repaired at a cost of $467.16, chargeable to maintenance. The sunken logs were removed from the canal between Fairy and Peninsula Lakes. Buoys have been made and a derrick placed on a scow to buoy the channels and shoals in Mary's, Fairy and Peninsula Lakes.

Maintenance Locks, Dams, Bridges, Dredging, etc.

The works attended to out of this appropriation in adidtion to those already mentioned were as follows:—

Slate River Bridge.—The usual precautions to prevent injury to the bridge from flooding were taken.

Port Sandfield.—Slight repairs were made to the swing bridge, which is very old and will require renewal at an early date. A small wharf for small boats was erected on the north side of the canal at the Lake Joseph end.

Magnetawan Locks, etc.—Slight repairs were made to the Magnetawan Lock before the opening of navigation. The swing bridge was also repaired. The Magnetawan River was cleared of sunken logs.

Still River Bridge.—The frost having raised the pile abutment of Still River Bridge at Byng Inlet, a slight expenditure was required to level the abutment.

Sturgeon Falls Bridge, Gibbons Township.—Some stone filling was added to the approach of this bridge where a slight washout occurred.

Bala Dam.—Slight repairs were made to the Bala dam, some new stringers to the stop log platform and boarding up the stop log openings during low water.

Stanley Bridge.—The usual precautions were taken to prevent damage by ice and logs during spring freshet.

Paipoonge Bridge.—Precautions were taken to prevent damage during spring freshet.

Deer Lake Dam, Magnetawan River.—New stop logs were provided and slight repairs made.

Wissi Wassa Dam.—The dam at the outlet of Wissi Wassa Lake, in the Township of Chisholm was lowered 2 feet 6 inches to prevent the flooding of lands and roads.

Indian Point Bridge, Manitoulin Island.—Slight repairs and new key for swing bridge.

Tomstown Bridge.—A few planks on the piers were renewed.

Fawcett Bridge, Township of Draper.—This bridge was repaired by chaining two stringers to bottom chords, putting in bent under east end, and replanking part of bridge. This bridge will require to be renewed at an early date.

Kahshe Bridge, Township of Morrison.—This bridge was repaired by replanking in part, putting a bent under the span, and a new stringer.

St. Jean Baptiste Bridge, Earlton.—Repairs to the approach of the bridge across St. Jean Baptiste Creek, on the main road from Earlton to Elk Lake, were necessary owing to a land slide. Two rows of piles were driven and the space bridged, at a cost of $193.56.

Croft Township Bridges.—Repairs were made to a bridge across the Magnetawan River on the 30th Sideroad in the 14th Concession of the Township of Croft which had been injured by the spring freshet. Repairs were also made to a bridge across the Narrows between Otter Lake and Beaver Lake, South Croft, which had been injured from being struck by a scow loaded with bark.

Keewatin Dam.—The waters of the Lake of the Woods were regulated by the caretaker of the dam at Keewatin by the removal and replacing of stop-logs as required. The gauge at Emo on the Rainy River was maintained, and daily readings were forwarded to the caretaker at Keewatin for his guidance in operating the logs.

Log Slide, Wahnapitae Lake.—A caretaker was placed in charge of the log-slide between Lakes Metagamasing and Wahnapitae while the logs were passing through the slide from May 26th to June 30th. The following quantities of timber passed through the slide: The C. Beck Manufacturing Company, Penetanguishene, 57,738 pieces, equivalent to 2,265,930 feet B.M. The United Factories Limited, Newmarket, 12,954 pieces, equivalent to 225,529 feet B.M.

Deer Lake Dam, Magnetawan River.—A caretaker was in charge of the dam from April 15th to October 15th to regulate the running of the logs and maintain the dam in good condition. The following quantities of logs were driven during the season of 1908: The Graves, Bigwood Co., 62,452 pieces, equivalent to 4,109,067 feet B.M.; John Harrison & Co., 16,488 pieces, equivalent to 783,801 feet B.M.; Burton Bros., 63,124 pieces, equivalent to 2,750,201 feet B.M.; Burton Bros. also 64,889 pieces, equivalent to 2,632,912 feet B.M.; Victoria Harbour Company, about 41,500 pieces.

Lockmasters' Returns.

The following are the lockmasters' returns of lockage made during the year 1908:

Port Carling Lock.—Four thousand one hundred and eighteen steamers, 1,034 small boats, 714 scows, and 74 rafts or cribs of timber.

Mary's and Fairy Lakes.—Five hundred and eighty-seven steamers, 228 small boats, 273 scows, and 48 rafts or cribs of timber.

Magnetawan Lock.—Eight hundred and sixty-seven steamers, 33 small boats, 904 scows, and 25 rafts or cribs of timber.

North and Black River Improvement.

The work of removing rock obstruction on the North River in the Townships of Orillia and Matchedash was carried on from the 1st of July to the 4th of September. The work done during the present season commenced on Lot No. 1, Concession 4, Township of Matchedash, which was completed and operations carried on further down the stream at Lot No. 17, Orillia Township. The work was done under the direction of Mr. John Spence, of Lovering. The cost of the work was $800.00.

Mississippi River Improvement.

This work consisted of excavating a channel through Monroe's Rapids in the Mississippi River, in the Township of Ramsay, near Carleton Place. The length of the channel excavated is about 1,350 feet, the depth averaged about 22 inches, and width, 25 feet. The work was done under contract by Mr. George A. Burgess, for the sum of $900.00. The material removed was solid rock.

Removing Obstructions, Nottawasaga River.

This work cosisted of the removal of a hard pan and gravel shoal from the Nottawasaga River in the 12th and 13th Concessions of the Township of Tecumseth, to improve the outlet of the drains entering the Nottawasaga River above that point. Large boulders were removed from the whole width of the river and a channel 24 feet in width and about 18 inches in depth excavated for the whole length of the shoal, about 2,500 feet. After the channel was completed and the waters above lowered, the river was cleared of sunken logs and brush and other obstructions. The work was carried out by Mr. Benjamin Dorsey as foreman, at a cost of $1,859.87.

Improving Black Creek, Monck and Watt Townships.

This work consisted of blasting a channel through solid rock 20 feet in width, 4 feet in depth, and 660 feet in length, removing logs and brush from the creek for a distance of 4 miles, and making ditches for a distance

of a mile and a quarter. This work will afford an outlet for the drainage of a large area of lands in the above named townships.

The work was carried out under the direction of Mr. William Lowe, at a cost of $1,480.51.

Improving Outlet, Lake St. John and Sucker Creek.

This work consisted in removing rock obstructions from Black River below the outlet of Lake St. John. A minimum width of 40 feet was provided for a distance of 210 feet, by blasting off projecting points and lowering the bed of the river through the rapids on Lot No. 17, Concession 1, Township of Rama, about 900 cubic yards of rock was removed.

Sucker Creek, in the Township of Mara, was thoroughly logged out and cleared of all debris and deepened sufficiently to allow a continuous flow. The brush and leaning trees were removed for a distance of ten feet on each side of the river bed. The work was carried out in a satisfactory manner by Mr. Joseph McGrath, of Rathburn, at a cost of $1,806.66.

Extension of Railways.

During the year 1908 there were completed and opened for traffic in the Province, 679.85 miles of new railway, as follows:—Canadian Pacific Railway, Bala to Romford, 133.20 miles; Walkerton to Lucknow, 37.70 miles; Code Junction on the London Section, Tilsonburg, Lake Erie and Pacific Railway to St. Mary's, 21.68 miles; Listowel Branch, 16.10 miles; Canadian Northern Ontario Railway, Parry Sound to Sudbury, 117.7 miles; Key Branch, 6.2 miles; Hutton Branch, 27.8 miles; Garson Branch, 3.7 miles; Temiskaming and Northern Ontario Railway, Englehart to Cochrane, 113 miles; Branch lines totalling 14 miles; Grand Trunk Pacific Railway,—Fort William to Lake Superior Junction, 188.77 miles. In addition to the above, 35.93 miles of track have been completed, but not opened for traffic, 50 miles of second track laid, 854.3 miles are under contract, and 823 miles located. The details as far as reported are given below:

Canadian Pacific Railway.—The Toronto-Sudbury Branch of the Canadian Pacific Railway was completed and opened for traffic. The mileage of new track from Bolton on the Owen Sound Branch, to Romford on the Main Line, is 226.20 miles. A service had been in operation as far as Bala in the previous year, a distance of 93 miles. Therefore the new mileage opened for traffic during the year 1908 is 133.20.

The Walkerton and Lucknow Railway.—115 miles, connecting Walkerton with the end of the track laid in 1907, were completed, enabling the line to be opened for traffic from Saugeen Junction, on the Owen Sound Branch, to the Town of Walkerton. This adds 37.70 miles of railway opened on this branch of the C. P. R. during the year 1908.

Tilsonburg, Lake Erie and Pacific Railway.—5.78 miles were constructed from Code Junction on the London Section to Embro Village, where connection was made with the St. Mary's and Western Ontario Railway.

St. Mary's and Western Ontario Railway.—15.9 miles (subsidiary line) were constructed by the St. Mary's and Western Ontario Railway from the T. L. E. & P. R'y connection at Embro Village to St. Mary's. These two railways, therefore, add 21.68 miles of new railway opened for traffic during the year 1908.

Guelph and Goderich Railway, Listowel Branch.—3.85 miles of track were laid on this branch, completing the line from Linwood Junction on the

Guelph and Goderich Branch to Listowel, and adding 16.10 miles of new railway opened for traffic during the year 1908.

Georgian Bay and Seaboard Railway.—11.5 miles were constructed from Coldwater Junction, on the Toronto-Sudbury Branch, to the west side of Victoria Harbor on Georgian Bay. This line has not been opened for traffic.

Improvements in alignment and grades between West Toronto and Bolton Junction, totalling 8.2 miles, were constructed during the year 1908. Double track was laid between Finch and Smith's Falls, and the double track system put in operation between these points, a distance of 50 miles.

Canadian Northern Ontario Railway.—The work of construction, etc., by the Canadian Northern Ontario Railway for the year 1908, comprise the following:—Parry Sound to Sudbury, 117.7 miles were opened for operation on July 1st; Key Branch, 6.2 miles opened for operation July 1st; Hutton Branch, 27.8 miles opened for operation July 1st; Garson Branch, 3.7 miles opened for operation July 1st; Orillia Branch, 11 miles under contract; Ottawa-Hawkesbury line, 58 miles under contract; Port Arthur-Sudbury Main Line, 27 miles under contract, 50 miles located; Ottawa to Toronto, 248 miles located during 1907 and 1908; Ottawa, French River Line, 295 miles, located during 1907.

Central Ontario Railway.—The Whitney extension of the Central Ontario Railway has been constructed for a distance of 10½ miles northerly from Maynooth, in a most substantial manner. The bridges, three in number, are built in a permanent manner; the first crossing of Papineau Creek has a reinforced skew concrete arch, having a span of 50 feet parallel to the line of track; the second crossing of Papineau Creek has a reinforced concrete arch 20 feet in clear span; the third structure is across Green's Creek, and has a span of 10 feet. It is a flat, concrete arch. All the culverts are of concrete,—no wood structures of any kind are used on the line. This portion has not been opened for passenger traffic, but considerable freight has been taken out, principally lumber and pulp wood. The country is very sparcely settled. It is the intention of the Company to erect a station at Lake St. Peter, where a small settlement exists. A fine station building constructed of concrete has been completed at Maynooth.

Manitoulin and North Shore Railway.—Grading has been in progress during the year 1908, and 5.65 miles completed from Little Current northerly.

Pere Marquette Railway Company.—The lines of this railway were well maintained during the year 1908. At Port Stanley, the old iron bridge was replaced by a 165 foot through trussed steel span on concrete abutments. 45 foot steel plate deck girders on concrete abutments were put in at Clay Creek near Sombra, and Baby's Creek near Mooretown. Reinforced concrete culverts were put in east of Leamington, east of Arner, west of Paquette and Pigotts. There were 42 cast iron pipe culverts put in of various sizes, replacing old wooden boxes. Tie renewals were well up to the necessities.

Michigan Central Railway.—No new lines were constructed during the year 1908. At Windsor about 6½ miles of track were laid in the new yard for yard purposes.

Toronto, Hamilton and Buffalo Railway.—The only construction work done by this railway during 1908 was a branch from their belt line in the City of Hamilton to Lottridge street, the mileage being 0.63. A continuance of this branch line has been located for a distance of 0.60 miles.

Thessalon and Northern Railway.—The work of construction on this railway has been completed from the north side of Lorne street in the Town of Thessalon to a point on the Algoma Branch of the Canadian Pacific Railway, a distance of 1.93 miles. A spur line 2,154 feet in length, is also com-

pleted to the ore trestle of the smelter of the Algoma Customs Smelting and Refining Company. The grading for a coal siding or spur, 1,536 feet in length to the coal dock on Georgian Bay, is constructed.

The Temiskaming and Northern Ontario Railway.—The line has been completed during the year 1908 to the Junction with the Transcontinental Railway at Cochrane, a distance of 140 miles north from New Liskeard. This portion has been taken over from the contractors and operated by the Commission. There has also been constructed and taken over by the Commission the Kerr Lake, Charlton and Haileybury Branches, totalling 14 miles. There has been located, but not contracted for, 22 miles of branches; 20 miles between Charlton and Elk Lake and 2 miles from Moore's Cove to Haileybury wharf. Exploration surveys, totalling 100 miles have been conducted.

Transcontinental Railway.—Construction work up to the end of December in the Province of Ontario comprised 12 miles of main line track laid, from the Manitoba boundary easterly. The entire line between the Quebec and Manitoba boundary, a distance of 758.3 miles, is under contract. Grading is being proceeded with from the Quebec boundary westerly for 172 miles; north and east from Lake Nepigon, 75 miles, and from the Manitoba boundary easterly for about 175 miles.

Grand Trunk Pacific Railway.—This railway was constructed and opened for traffic during the year 1908, from Fort William to the Junction with the Transcontinental Railway main line, known as Lake Superior Junction, a distance of 188.77 miles. The Company have located a branch line from North Bay, running in a north-westerly direction towards the main line of the Transcontinental Railway, for an approximate distance of 230 miles.

REVISED STATEMENT OF RAILWAY MILEAGE IN ONTARIO TO DECEMBER 31st, 1908.

No.	Name of Railway.	Terminal Points.		Completed prior to Confederation.	Completed since Confederation.	At present under construction.	Total length in operation of each railway or system of railways in miles.
		From	To	Length in miles.	Length in miles.	Length in miles.	
1	Grand Trunk Railway, Main Line	East Prov. Bound..	Point Edward	157			
2	do Buffalo and Lake Huron Branch	Fort Erie	Goderich	158			
3	do London Branch	St. Mary's	London	23			
4	do Galt and Doon Branch	Galt	Berlin	7	4.5		
5	do Waterloo Junction Railway	Waterloo	Elmira		10.25		
6	do Toronto and Nipissing Branch	Toronto	Coboconk		88		
7	do Midland Railway, Main Line	Port Hope	Midland City	65	51.53		
8	do do Peterboro' Branch	Millbrook	Lakefield	13	9.		
9	do Lake Simcoe Junction	Stouffville	Jackson's Point		26.5		
10	do Whitby, Port Perry and Lindsay	Whitby	Lindsay		46		
11	do Victoria Railway	Lindsay	Haliburton		55.81		
12	do Grand Junction Railway	Belleville	Peterborough		64.65		
13	do Belleville and North Hastings	Madoc Junction	Eldorado		22		
14	do Toronto and Ottawa	Madoc	Bridgewater		9		
15	do do Manilla Link	Wick	Manilla		6.5		
16	do do Omemee Link	Omemee	Peterborough		14		
17	do Port Dover and Lake Huron	Port Dover	Tavistock		55.68		
18	do South Norfolk Railway	Simcoe	Port Rowan		17		
19	do Chemong Branch	Peterborough	Chemong Lake		9		
20	do Stratford and Huron	Stratford	Wiarton		106.27		
21	do Owen Sound Extension	Parkhead	Owen Sound		12.40		
22	do Georgian Bay and Wellington	Palmerston	Durham		26		
23	Grand Trunk Railway Great Western Div. Main Line	Suspension Bridge	Windsor	229			
24	do Toronto and Hamilton Branch	Toronto	Hamilton	39.5			
25	do Loop Line Division	Glencoe	Fort Erie		145		
26	do Kingscourt and Glencoe Link	Kingscourt	Glencoe		20.6		
27	do Sarnia Branch	Komoka	Sarnia	51			
28	do Petrolea Branch	Wyoming	Petrolea	7			
29	do Brantford Branch	Harrisburg	Brantford	8			
30	do Brantford and Norfolk	Brantford	Tilsonburg		35.88		
31	do Lynden to Brantford	Lynden	Brantford		4.12		

REVISED STATEMENT.—*Continued.*

No.	Name of Railway.	Terminal Points. From	Terminal Points. To	Completed prior to Confederation. Length in miles.	Completed since Confederation. Length in miles.	At present under construction. Length in miles.	Total length in operation of each railway or system of railways in miles.
32	Grand Trunk Railway, Great Western Div.	Wellington, Grey and Bruce	Harrisburgh	Southampton	27	102		
33	do	do	Palmerston	Kincardine		66		
34	do	London, Huron and Bruce	Hyde Park Junction	Wingham		69.75		
35	G. T. R. Western Div.—Welland Railway		Port Colborne	Port Dalhousie	25			
36	Northern Railway, Collingwood Line		Toronto	Meaford	94	21		
37	do	Muskoka Branch	Barrie	Gravenhurst		53		
38	do	Hamilton and Northern, Main Line	Port Dover	Allandale		135.3		
39	do	do do Collingwood	Clarksville	Collingwood		40		
40	do	North Simcoe Junction	Colwell	Penetanguishene		33.34		
41	Northern and Pacific Junction Railway		Gravenhurst	La Vause		111.5		
42	Magnetawan River Railway		Burk's Falls Station, G. T. R.	Burk's Falls Village		1.01		
43	Toronto Belt Line Railway, Eastern Section		Don Station, G.T.R.	Junc. Northern Ry.		8.50		
44	do	Western Section	Carleton, on G.T.R.	Swansea		4.33		
45	Canada Atlantic Railway		East Prov. Bound.	Ottawa		68 08		
46	do	Ottawa, Arnprior & Parry So'nd Ry	Ottawa	Scotia		212.60		
47	do	Parry Sound Colonization Ry.	Scotia	Depot Harbor		51.20		
48	do	Central Counties Railway	Glen Robertson	Hawkesbury		21		
49	do	do do	South Indian	Rockland		17		3,061.8
50	Canadian Pacific Railway, Main Line		Ottawa	West Prov. Bound.	57	1,150		
51	do	do	Ottawa	East Prov. Bound.		66.40		
52	do	Algoma Branch	Sudbury Junction	Sault Ste. Marie		180.25		
53	do	Brockville and Ottawa Railway	Brockville	Carleton Place	46			
54	do	St. Lawrence and Ottawa Railway and Chaudiere Branch	Prescott	Ottawa	59.5			
55	do	Ontario and Quebec Railway	Toronto Junction	East Prov. Bound.	12	281.25		
56	do	do Don Branch	Main Line	Toronto		5		
57	do	do Detroit Extension	London	Windsor		112.50		
58	do	Credit Valley Railway, Main Line	Toronto	St. Thomas		119.13		
59	do	do Orangeville Branch	Streetsville Junction	Elora and Orangeville		61		
60	do	do Guelph Branch	Campbellville	Guelph		15		

REVISED STATEMENT.—*Continued.*

No.	Name of Railway.	Terminal Points.		Completed prior to Confederation.	Completed since Confederation.	At present under construction.	Total length in operation of each railway or system of railways in miles.
		From	To	Length in miles.	Length in miles.	Length in miles.	
61	Can. P. Ry., Toronto, Grey & Bruce, Main Line	Toronto	Owen Sound		122		
62	do do Teeswater Branch	Orangeville	Teeswater		72		
63	do do Wingham Branch	Glenannan	Wingham		4.75		
64	do West Ontario Pacific Railway	Woodstock	London		26		
65	do Atlantic and Northwest Railway	Renfrew	Eganville		19.25		
66	do Lindsay, Bobcaygeon and Pontypool Railway	Burketon	Bobcaygeon		38.79		
67	do Sudbury and Kleinburg Branch	Bolton	Romford		226.20		
68	do Guelph and Goderich Railway	Guelph	Goderich		88		
69	do do Listowel Branch	Listowel Junction	Listowel		16.10		
70	do Walkerton, Lucknow Railway	Saugeen Junction	Walkerton		37.70		
71	do Tilsonburg, Lake Erie & Pacific	Port Burwell	Embro		41.11		
72	do St. Mary's & Western Ontario Ry.	Embro	St. Marys		15.90		
73	do Georgian Bay & Seaboard Ry.	Victoria Harbor	Coldwater Junction		11.5		2,884.33
74	Michigan Central Railway, formerly Canada Southern, Main Line	Windsor	Suspension Bridge		226.80		
75	Michigan Central Ry., St. Clair Branch	St. Clair Junction	Courtright		62.2		
76	do do Amherstburg Branch	Amherstburgh	Essex Centre		15.7		
77	do Oil Springs Branch	Oil City Junction	Eddy's		5.2		
78	do Petrolea Branch	Petrolea Junction	Petrolea		4.9		
79	do Leamington & St. Clair Baanch	Comber	Leamington		15.9		
80	do Fort Erie Branch	Welland Junction	Fort Erie		17.4		
81	do Niagara Branch	Fort Erie	Niagara	30			378.10
82	Cobourg, Peterboro' & M'mora Ry., M'mora Line	Cobourg	Harwood	14.5			14.50
83	Kingston & Pembroke Railway	Kingston	Renfrew		103		103
84	Prince Edward County Railway	Picton	Trenton and G.T.R.		32.44		
85	Central Ontario Railway	Trenton, at G.T.R.	Maynooth		110	20	
86	Ontario and Belmont and Northern Railway	Central Ontario Ry.	Belmont Mine		9.57		152.01
87	Bay of Quinte Ry., formerly Napanee, Tamworth and Quebec	Deseronto	Bannockburn		78.45		
88	Bay of Quinte Ry., Harrowsmith Branch	Yarker	Sydenham		11.37		
89	do Old Line	Deseronto	Grand Trunk Ry		3.5		93.32
90	Nosbonsing and Nipissing Railway	Lake Nipissing (S.E. Bay)	Lake Nosbonsing		5		5.00

REVISED STATEMENT—*Continued*

No.	Name of Railway.	Terminal Points.		Completed prior to Confederation.	Completed since Confederation.	At present under construction.	Total length in operation of each railway or system of railways in miles.
		From	To	Length in miles.	Length in miles.	Length in miles.	
91	Irondale, Bancroft and Ottawa Railway	Kinmount	Bancroft		45		45.00
92	Brockville, Westport and Sault Ste. Marie	Brockville	Westport		45		45.00
93	Lake Erie and Detroit River Railway	Walkerville	St. Thomas		126.85		
94	do Erie & Huron Railway	Rondeau	Sarnia		70.47		
95	do London & Port Stanley Railway	London	Port Stanley	25			222.32
96	Canadian Northern Railway, formerly Port Arthur, Duluth & Western Railway, and Ontario & Rainy River Railway, Main Line	Port Arthur	West Prov. Bound		287		
97	Canadian Northern Railway, Duluth Extension	Stanley Junction	Gun Flint Lake		66.54		
98	do do James Bay Railway	Canada Atlantic Ry	Parry Harbor		3.7		
99	do do Toronto & Sudbury Line	Toronto	Sudbury		265		
100	do do Key Branch	Key Branch	Key Harbor		6.2		
101	do do Hutton Branch	Sudbury Junction	Hutton Mines		27.8		
102	do do Garson Branch	Garson Junction	Garson Mine		3.7		
103	do do Orillia Branch	Orillia Junction	Orillia			11	
104	do do Ottawa, Hawkesbury	Ottawa	Hawkesbury			58	
105	do do Port Arthur, Sudbury, Main Line	Port Arthur	Sudbury			27	659.94
106	Toronto, Hamilton and Buffalo Railway	Waterford	Brantford		18		
107	do do do	Brantford	Welland		62.5		80.50
108	Ottawa and New York Railway	Ottawa	Cornwall		55.00		55.00
109	Pembroke Southern Railway	Pembroke	Golden Lake		21.50		21.50
110	Algoma Central Railway	Sault Ste. Marie	Michipicoten Junc		69	101.50	
111	do do Michipicoten Branch	Michipicoten Harbor	Main Line		22.10		91.10
112	Manitoulin and North Shore Railway	Sudbury	Gertrude Mine		13.50	5	13.50
113	Bruce Mines and Algoma Railway	Bruce Mines	Rock Lake		17		17
114	Temiskaming and Northern Ontario Railway	North Bay	Transcontinental Ry		252		
115	do do do Branch Lines				14.0		266
116	Huntsville and Lake of Bays Railway	Peninsula Lake	Lake of Bays		1.5		1.5
117	Transcontinental Railway	East Prov. Bound	West Prov. Bound			758.3	
118	Grand Trunk Pacific Ry., Lake Superior Branch	Fort William	TranscontinentalLine		188.77		188.77
119	Thessalon, Northern Ontario Railway	Thessalon Junction	Thessalon			1.93	
				1,447.5	6,951.69	982.73	8,399.19

STATEMENT OF ELECTRIC RAILWAY MILEAGE IN ONTARIO.

Number.	Name of Company.	Length of Line, Completed.	Length of Line, Under construction.	Number of power houses, Steam power.	Number of power houses, Water power.	Remarks.
1	Berlin and Waterloo 3.02	.....	.....	1	.....	Power purchased from Berlin Light Commissioners.
	Leased Line, Berlin and Bridgeport.....2.50	5.52				
2	Brantford Street.....	7	.....	1	.....	
3	Brantford and Hamilton Electric Ry	33	.....	.....	.....	
4	Chatham, Wallaceburg and Lake Erie	21.5	14.	.....	.....	
5	Cornwall Street.....	6.5	.....	1	1	
6	Grand Valley.....	23.5	6.	1	.....	Power also hired from Brantford Street Ry.
7	Guelph Radial.....	6.	.....	1	.....	
8	Galt, Preston and Hespeler....9.00					
	Leased Line, Preston to Berlin 10.75	19.75	.....	1	.....	
9	Hamilton Street.....	21.807	.....	.....	.....	Power supplied by the Cataract Power Co.
10	Hamilton & Dundas.	7.25	.....	.....	.....	Power supplied by the Cataract Power Co.
11	Hamilton Radial.....	22.	1.	1	.....	
12	Hamilton, Grimsby & Beamsville...	27.5	.....	1	.....	
13	International Transit Co.....	3.3	.....	.....	.....	Sault Ste. Marie rent H. P. from Lake Superior.
14	Kingston, Portsmouth & Cataraqui..	8.	.....	1	.....	
15	London Street.....	33.3	.....	1	.....	
	Metropolitan (See Toronto & York Radial)					
16	Mount McKay and Kakabeka Falls	3.	.....	.....	.....	
17	Niagara Falls Park and River	11.85	.....	.....	1	Subject to the control of Niagara Falls Park Commissioners.
18	Niagara, St. Catharines & Toronto..	32.78	.....	.....	....	
19	Niagara Falls, Wesley Park & Clifton	4.5	.....	.....	.....	
20	Ottawa City Passenger.....	24.67	.....	.....	1	
21	Oshawa Railway	8.3	.....	.....	.....	
22	Port Arthur and Fort William	9.5	.....	.....	1	
23	Peterboro' Radial	6.	.....	.....	2	Power obtained from Peterboro' Hydraulic Power Co.
24	Port Dalhousie, St. Catharines & Thorold....	8.17	.....	.....	.....	
25	Sarnia Street.....	9.25	.....	.....	.....	Power hired.
26	Sandwich, Windsor & Amherstburg	25.073	1	1	.....	
27	South-Western Traction.....	28.5	.....	1	.....	
28	St. Thomas Street.....	7.5	.....	1	.....	
29	Toronto & York Radial, Toronto, Metropolitan Branch.....	52.88	.....	2	.....	
	Toronto & Mimico.....	10.	.....	.....	.....	Power hired.
	Toronto & Scarborough.....	10.	.....	.....	.....	Power hired.
30	Toronto Suburban.....	9.81	.....	1	.....	Power hired.
31	Toronto Street	107.23	.....	.....	.....	Two sub-stations, mileage includes turnouts and terminals.
32	Windsor & Tecumseh Elec. Railway	10.	.....	.....	.....	Operated by the Sandwich, Windsor & Amherstburg Railway.
33	Woodstock, Thames Val. & Ingersoll	10.2	.....	1	.....	
34	Windsor, Essex & Lake Shore Railway	37.28	.....	1	.....	
	Total mileage.....	672.42	22.	.....	.....	

Drainage Works.

The following municipalities have received aid in the construction of drainage works under the provisions of the Provincial Drainage Aid Act, 63 Vic., Chap. 8, during the year 1908.

Bromley Township Drainage Scheme.—This drainage scheme was carried out to provide an outlet for a belt of low lying land containing an area of 9,800 acres, and consisted of removing 1,300 cubic yards of rock and about 600 cubic yards of gravel from the bed of Snake River, and the construction of a bridge over the stream on the road between Lots 19 and 20, Concession 3, Township of Bromley. An inspection was made by an Engineer from the Department, who reported the work as satisfactorily done. The amount of the Legislative grant, $1,000.00, was therefore paid to the Treasurer of the Township of Bromley.

McIntyre Creek, Township of Drummond.—McIntyre Creek is the main outlet for a large number of award and municipal drains. The total length of the drain is about six and a half miles, which extends from the side-line between Lots 8 and 9, Concession 7, to the outlet of the creek into Mississippi Lake on Lot No. 21, Concession 9.

The principal works consisted in the removal of rock and hardpan from Lot No. 13 in the 8th Concession, to the outlet.

The original estimate of the cost of the work was $11,338.46. The final cost amounted to $18,136.64. A grant of $1,200 was paid during the progress of the work, in the year 1906. An examination of the works was made on the 13th of November, 1908, by Mr. A. J. Halford, an engineer of the Department, who reported the work as fully completed. The amount of the Legislative grant, $1,000.00, was therefore paid to the Treasurer of the Township of Drummond.

Merrick Creek.—This drainage system is situated in the southwest part of the Township of Sandwich South, and has a length of five and a half miles. It is the main outlet for a large tract of swampy lands, comprising some 4,500 acres. The work commenced in the 8th Concession swamp and extends west on the South Talbot road to the 8th Concession road, thence south along the 8th Concession road to the Merrick Creek at the centre of Lot 3, thence west and south through Merrick Creek to the Anderdon townline.

The work was inspected by Mr. A. J. Halford, an engineer of the Department, who reported the work as fully completed. The amount of the Legislative grant, $1,000.00, was therefore paid to the Treasurer of the Township of Sandwich South.

Dawn and Enniskillen.— This drain is in three sections, the Kilmer drain, the Bobier drain, and the Dawn and Enniskillen townline drain. The Kilmer drain is in the first Concession of Enniskillen, and extends from Lot 32 to Lot 24, a distance of 2½ miles. The Bobier drain is in the 1st Concession of Enniskillen, on the sideline between Lots 27 and 28, and extends from the rear of the 1st Concession south to the townline, thence west on the north side of the townline to the west quarter of Lot 26, a total distance of about one and one half miles.

The Dawn-Enniskillen townline drain commences at the townline between Brooke and Enniskillen, and runs west on the north side of the Dawn-Enniskillen townline 128 rods; thence west on the south side of the townline 532 rods; thence northwest in a water course 392 rods, to the centre of Lot 23 in the 1st Concession of Enniskillen. The total length of this section is three and six-tenths miles.

An inspection of the drain was made on the 8th of December, by Mr. A. J. Halford, an engineer of this Department, who reported that the work on the Kilmer and Bobier section was completed, and that good progress had been made on the Dawn-Enniskillen section. A portion of the Legislative grant, $1,500.00, was therefore paid to the Treasurer of the Township of Enniskillen. The balance of the grant, $1,000.00, will require to be revoted at the next session of the Legislature.

Pike and Dauphin Drainage Works.—These drainage schemes are situated in what are known as the Chatham Plains, the Pike drain in the Township of Raleigh, and the Dauphin in the Township of East Tilbury, on the south bank of the River Thames. The lands are lower than the high water elevation of Lake St. Clair, and embankments are raised to a height of about nine feet above the normal level of the lake. Internal drainage is effected by pumping over the embankments. These works were originally constructed in the year 1895. During the years 1902, 1903 and 1904, by reason of excessive rainfall and consequent high floods, the annual assessments for pumping and maintenance were inadequate to meet the cost.

In the spring freshet of 1904, an unprecedented rise in the waters of the River Thames occurred. The water broke over the embankment and submerged the entire drainage area to a depth of from 5 to 7 feet. Serious loss occurred from the drowning of stock, the flooding of granaries and barns, and the loss of the crop for the season. The taxpayers were consequently unable to meet their payment, the drainage taxes on these lands being exceedingly heavy. A grant of $2,000.00 was made at the last session of the Legislature to the Pike drainage works, and $2,000 towards the Dauphin works. These sums were paid to the Treasurers of the Townships—$2,000 to the Treasurer of the Township of Raleigh, and $2,000 to the Treasurer of the Township of Tilbury East.

Aux Raisin River Drainage Works.—This is a very extensive drainage scheme, having a length of 19¼ miles. The work begins on Lot 15, at the line between the 7th and 8th Concessions of Osnabruck, and runs south through the 7th, 6th and 5th Concessions; thence easterly through the 5th and 4th Concessions to the townline between Osnabruck and Cornwall; the length of the drain in Osnabruck is about 12 miles. The drain continues easterly through the 7th Concession of Cornwall to Lot 20, a distance of about seven and one half miles. The work is being carried out under plans dated March 22nd, 1904, prepared by Messrs. F. D. McNaughton and James S. Laird, Civil Engineers. Messrs. Magwood and Walker, Civil Engineers, Cornwall, are supervising the work.

The original estimated cost of the work was $49,005.62. Assessed against the Township of Osnabruck, $28,657; the Township of Cornwall, $18,554.46, and the Township of Roxborough, $1,849.18. The contract for the work was at schedule rates—20c. per cubic yard for earth, 73c. per cubic yard for hard pan, and $1.75 per cubic yard for rock. The work developed a far larger quantity of hard pan and rock than originally estimated, hence the cost of the work will largely exceed the estimate.

An examination of the work was made by Mr. A. J. Halford, an engineer of this Department, on November 11th, 1908, when work to the amount of $94,725.84 had been done, and the engineers estimated that a further amount of $27,113.30 would be required to fully complete the work. Two dredges were at work at the time of examination. In 1907 a grant of $4,000 was made by the Legislature to aid this drainage scheme, as the work had not progressed far enough in 1907 to warrant the payment of the money. The sum was revoted at the last session of the Legislature and was paid to the

Treasurer of the ownship of Osnabruck, the three townships, Roxborough, Cornwall, and Osnabruck to share in the grant, proportionally to the original assessments.

Cavan Drainage Works.—A grant of $4,000 was made towards this work in the year 1907, and a payment of $2,000 was made in that year, and the balance, $2,000, was revoted. A full description of the works will be found in the Report for 1907. An inspection of the work was made by Mr. A. J. Halford, an engineer of this Department, in the month of September last, who reported that the work was completed at a total cost of $15,692.87. This drain is doing effective work, and has made a wonderful transformation in the condition of the long swamp.

The amount of the Legislative grant revoted at the last session of the Legislature, $2,000, was paid to the Treasurer of the Township of Cavan.

Ruscombe River Drainage Works.—In the year 1904 the sum of $3,000 was paid to the Township of Rochester to assist in the improvement of the Ruscombe River and Silver Creek, when extensive work was done in these streams to provide an outlet for the drainage of 32,500 acres in the townships of Rochester, Tilbury West, Mersea, and Gosfield North and Gosfield South. The improvements carried out at that time stopped at a point 2,500 feet north of the Michigan Central Railway, on Lot No. 20, in the 6th Concession of the Township of Rochester. The owners of the flat lands north of this point being compensated for injury to their lands under the provisions of 2 Edw. VII., Chap. 32, Sec. 1-8*a*, which provides that where, in the opinion of the engineer or surveyor, the cost of continuing the drainage work to a point where the discharge of water will do no injury to lands and roads, will exceed the amount of injury likely to be caused to low lands below the termination of the work, he may, instead of continuing the work to such a point, include in his estimate of the cost of the drainage works, a sufficient sum to compensate the owners of such low-lying lands for any injuries they may sustain from the drainage works. Extensive improvements in drainage have been carried out above the outlet provided in the year 1904, and the flow of water has so increased that the flat lands below suffer to a great extent through flooding, the loss of bridges, fences, etc. The Township of Rochester has undertaken work to continue the outlet of the drain to deep water at the Canadian Pacific Railway, a distance of 1,938 rods. From this point the Federal Government are improving the mouth of the river by removing a bar. On the completion of these works an efficient outlet will be obtained for the Ruscombe River Drainage Works.

A grant of $4,000 was made at the last session of the Legislature to assist the Township of Rochester in carrying out these improvements. An inspection of the works was made on January 7th, 1909, by Mr. J. A. Halford, an engineer of this Department, who reported that a channel 30 feet wide and 6 feet deep, had been dredged for a distance of about two and one half miles; that the work was in progress at the date of inspection, and the contractor expected to complete it within six weeks.

A portion of the Legislative grant, $2,000, was paid to the Treasurer of the Township of Rochester. The balance of the grant, $2,000, will require to be revoted at the coming session of the Legislature.

Logan North-West Drain.—The drainage work, known as the Logan North-West Drain, has a total length of about 16 miles, and lies entirely within the Township of Logan. The work is in four branches:—The Main Drain, the Grey Branch, the Centre Branch and the South Branch. The Main Drain commences at the townline between Logan and Elma, on Lot 26, and runs south through a swamp about 4 miles to the 11th Concession,

where it is joined by the Grey Branch: thence it flows southeasterly along a creek bed to a point near the front of the 7th Concession. The entire length of the main drain is nearly eight miles. The Grey Branch commences at the townline between Logan and Grey Townships, between Lots 30 and 31, and runs south about 4 miles to its junction with the main drain. The Centre Branch commences on Lot 29 in the 16th Concession, and runs south a distance of two miles to the junction with the Grey Branch near the centre of the 13th Concession. The South Branch commences at the north part of the 12th Concession, between Lots 25 and 26, and flows south-west to its junction with the main drain, a distance of about 2 miles. The total estimated cost of the work is $12,046.25, assessed as follows: Township of Logan, $10,291.05; Township of Elma, $814.50; Township of Grey, $325.50, and Township of McKillop, $114.20. An examination of the work was made on the 23rd of November, 1908, by Mr. A. J. Halford, an engineer of the Department, who reported that the work on the South Branch was completed, that one mile on the lower end of the main drain was completed, and that work was in progress on the Grey Branch. A portion of the Legislative grant, $500, was paid to the Treasurer of the County of Logan; the balance of the grant, $500, will require to be revoted at the next session of the Legislature.

Hardy Creek Drainage, Adelaide and Metcalfe.—This drainage work begins at the townline between Adelaide and Metcalfe, on Lot 4, and extends southerly through Concessions 1, 2, 3 and 4, in Metcalfe, crossing the townline into the Township of Brooke near the front of the 5th Concession. The bottom width of the drain is 8 feet at the head and 14 feet at the outlet The total length of the drain is about 6 miles. At the last session of the Legislature the sum of $2,500 was voted in aid of this work. An inspection was made on December 8th, 1908, by Mr. A. J. Halford, an engineer of this Department, who reported that the work was completed, except a portion in the 2nd Concession, which, owing to the great number of ponds encountered, was too wet to permit the finishing of the work during the season of 1908 A portion of the Legislative grant, $1,500, was paid to the Treasurer of the Township of Metcalfe—the balance of the grant, $1,000, will require to be revoted at the next session of the Legislature.

All of which is respectfully submitted.

I have the honour to be,

Sir,

Your obedient servant,

R. P. Fairbairn,

Engineer Public Works.

Parliament Buildings,
Toronto, 10th February, 1909.

REPORT OF THE SUPERINTENDENT OF COLONIZATION ROADS.

To the Honourable J. O. Reaume,
Commissioner of Public Works, Ontario.

Sir,—I have the honor to submit the report upon Colonization Roads for the year 1908. As will be seen from the general works enumerated about two hundred and ninety-three miles of road were opened, and about ten hundred and ninety generally repaired and improved.

North Division.

Aweres Road.—For the sum of about $800, one hundred and seventy-two rods of ditching, and altogether a mile was repaired and gravelled.

Atikokan Road.—One hundred and forty-seven rods were opened, cleared and double ditched in an unorganized district.

Aberdeen from Galbraith.—Half a mile opened the full width of sixty feet across lot 1, con. 1, Aberdeen and well grubbed.

Aberdeen, Con. 6, Road and Bridge.—The grubbing and grading of half a mile with a bridge having a span of twenty-five feet and length of fifty-seven -feet.

Allan and Gordon Township Roads.—General repairs and improvements.

Batchawana Road.—Eighteen miles were generally improved. It is also called and known as "Goulais Bay Road."

Barrie Island Roads.—Two miles and a quarter were improved from the lake (Huron), on the 17th side road to "No. 2 school house."

Bellevue Road.—About a mile was improved over a portion opened last year. A large amount of crosswaying was laid making a good and useful highway.

Billings Township Roads.—On the 25th side line of Billings ending at the 10th side road, some two and a half of work is represented.

Bidwell and Manitowaning Road.—This represents one hundred and sixty rods of gravelling and ditching.

Balfour Township Roads.—In the 2nd concession across lots 4 to 12, satisfactory repairs were effected.

Bright, Con. 4 to Dean Lake.—Between lots 6 to 8, con. 4, a mile of work was done, opening the length through a green bush.

Bright Additional Road.—A work in the township named and into that of Day from lot 1, con. 3, towards Thessalon township on which two miles and three-quarters were generally improved.

Bruce Mines and Nesterville Road.—In the townships of Lefroy and Plummer Additional three miles were graded and well improved.

Bruce Mines (in Plummer) Road.—Across lots 10 to 12, con 4, two hundred rods of gravelling was done putting the road into good general condition.

Bright (between lots 10 and 11) Road.—In the townships of Bright and Bright Additional half a mile in the first named, and a mile and a half in the latter was grubbed, graded and generally improved.

Blind River Road.—In the township of Striker a heavy hill was cut down and a mile and a quarter opened 40 feet wide and grubbed and graded 25 feet in width.

Basswood Lake Road.—Three miles were graded and generally improved from the east corner of lots 3, con. 6 to lot 8 in the same concession of the township of Kirkwood.

Sudbury—Soo Trunk Wagon Road—On the Blind River Section.

Sudbury—Soo Trunk Wagon Road—Grading on the Blind River Section.

Blake North Town Line Road.—Over lots 8 to 10 a mile was graded with the necessary ditching.

Blake Township Road.—From Fort William some six miles and three-quarters were graded and some general ditching done.

Ball and Shenston Road.—General repairs representing an expenditure of about $500 and a length of some two miles.

Burris and Carpenter Town Line Road.—Two miles opened 40 feet wide with three hundred and sixty rods of double ditching.

Burris, 5 and 6 Con. Line Road.—Between one and two miles of repairs.

Blue, Pratt and McCrossen Road.—In the townships named there were 680 rods of grubbing, 300 rods of corduroying, a mile opened the full width of 66 feet and corduroyed and graded generally, which, with the filling in of a ravine 72 feet long represents a very fair amount of work for the grant.

Blue and Curran Town Line.— One mile was opened in the township of Blue on which 134 rods of corduroying was laid with 104 rods of top ditching, while in the township of Worthington about a mile was opened and largely crosswayed.

Cockburn Island.—General repairs were made for an expenditure of about $150.00.

Carpenter between Lots 6 and 7 Road.—Between lots 6 and 7, through concessions 3 to 6, the work was chiefly drainage over several miles.

Conmee Township Roads.—Some four or five miles were graded and otherwise improved.

Campbell Creek Bridge.—A bridge erected on lot 7, con. 5, in the township of Wells.

Centre Line Road, Plummer Additional.—Between lots 10 and 11 between concessions 2 and 3, half a mile was opened.

Carnarvon Township Roads.—Some four miles were gravelled, stoned and graded for an expenditure of about $800.

Creighton Township Roads.—Three miles graded, ditched and generally improved.

Dawson and Robinson Township Roads.—On Manitoulin Island some four miles were improved through the townships mentioned.

Dean Lake Road.—In the township of Thompson, Algoma District, half a mile was opened and graded.

Day Mills Road.—Two miles and a half were repaired from Mississaga river (near Iron Bridge) eastward, making a generally good road.

Dowling Township Road.—Something like a mile was opened on lot 6, con. 4, grading and generally improving the length.

Desbarats and Bruce Mines Road and Bridge.—In the township of Johnston a mile of work was done including a 30 feet span bridge and total length of sixty feet.

Dobie, between Cons. 4 and 5, Road.—Several miles of general repairs were made.

Dawson Road.—Through the townships of Oliver and McIntyre some five miles were brushed out and generally improved.

Dorion Township Roads.—Between four and five miles were improved upon various roads for the outlay of about one thousand dollars.

Dilke and Nelles Road.—Between sections 34 and 35, and 2 and 3 Dilke, a mile of expensive road was opened with three hundred rods of double ditching.

Day and Thessalon Road.—A mile and a half of work including a considerable quantity of gravelling between lots 32 to 34 in the sixth concession of the township of Day.

Espanola Roads.—From Stanley to connect with the main colonization road in the township of Baldwin, a mile was opened and a mile and a half improved between Espanola and Stanley.

Emo and Devlin Road and Drain.—One mile of clearing, grubbing and stumping, one hundred and eleven rods of crossweying, two miles of ditching, and one hundred and thirty rods of top drains.

Fourth Concession, Howland Road.—General repairs of betwen one and two miles.

Fort Frances, McIrvine, and Miscampbell Road.—General corduroying.

Grunsthorpe Road.—In the township of Campbell, lots 8 to 12 in the 12th concession, general improvements were made for something like a mile and a half.

Galbraith Township Road.—Between lots 4 and 5 in the 6th concession, a road was opened and generally improved for half a mile.

Gough Township Road.—The clearing and stumping of a mile and a half through concessions 1 to 6 on the town line between May and Hallam, and Gough and Shakespeare.

Gladstone Road.—From lots 2 to 4, con. 5, half a mile was opened and generally grubbed with some gravelling.

Goulais Bay Road.—Four miles and a half were repaired or renewed. Considerable damage resulted by ice and pulpwood jams causing flooding to the depth of several feet upon flats and destruction of culverts and small bridges. The outlay has however repaired and kept the road open and travelable.

Galbraith, 3rd Co., Road.—On lot 2, con. 3, a road was opened 66 feet wide for half a mile, with general ditching.

Gould and Parkinson Road.—A road in the township of Wells, gravelled from lot 10, con. 1, Grasett, to lot 4 between concessions 5 and 6, Wells, covering about four miles.

Grey's Road to Onaping.—General repairs from railway siding.

Gorham and McIntyre Road.—On lot 15, con. 1, grading, ditching and opening to the length of about one mile.

Gillies Road.—On lots 7 and 8, concessions 1 and 2, half a mile of repairs were made.

Gillies and Scoble Town Line Road.—Across lots 1 and 2 about a mile of repairs were made.

Howland Municipality Roads.—Two miles were well gravelled in the township of Bidwell, and seventy-five rods of swamp gravelled on lots 3 and 4, concession 4, in the township of Howland.

Hallam, between lots 9 and 10 and Lots 5 and 6, Road.—Half a mile was opened and a mile and a half well improved.

Hallam Township Roads.—Five miles were generally repaired over various portions of the township, and another mile was improved on lots 9 and 10 in the first concession.

Hilton Township.—On St. Joseph Island nearly three-quarters of a mile was graded through a deep muskeg swamp from con. G. to con. H., St. Joseph township and partly gravelled.

Haughton Wells Gould Road.—Through concessions 5 and 6 and lots 9 and 10, a mile and a quarter was well opened.

Haveland and Fenwick Town Line Road.—A quarter of a mile of repairs, with 30 rods of gravelling.

Iron Bridge Road.—Eight miles were graded with a grader from two miles and a half east of Iron Bridge northward into Parkinson and reported as excellent work.

Isbester and Bar River Road.—Between sections 2 and 10, Laird, three hundred and seventy-four yards of gravel were laid over a muskeg, making a generally passable road through the entire length.

Johnston and Tarbutt Boundary Line Road.—A mile and a half of work was done over the above named boundary.

Kagawong to Gore Bay Road.—Improvements were made over several miles on this road on Manitoulin Island.

Killarney and Rutherford Township Road and Bridges.—Some $275 spent in general repairs.

Keating Location Road.—Through this property to the township of Johnson some four miles were repaired.

Kingsford Roads.—In this township three and a half miles were opened and a mile graded and otherwise improved.

Korah Township Roads.—General repairs were made in the townships of Korah and Parke amounting to some four miles of improvements.

Lavalle and Fort Frances Road.—In the township of Crozier half a mile was opened, nearly a mile grubbed, and about half a mile of crosswaying with nearly three miles of single ditching and other necessary work.

Little Ford and Lavalle Road.—In the township of Devlin, through concessions 10 and 11 and 22 and 23 more than two miles and a quarter, 40 feet wide, and grubbed. Three hundred and sixty-six rods of crosswaying were laid with about an equal length of single ditching and over a mile of small bridging.

Lavalle and Burris Road.—About a mile of crosswaying was made with an equal length of ditching.

Lybster Township Bridges.—A bridge was erected over Whitefish River, with spans of 30 feet, upon piers 9 feet high. The bridge is near 36 mile post of Port Arthur and Duluth Railway.

Lumsden Township Road.—Between lots 4 and 5 of concession 1, a mile was graded, making a satisfactory road.

Lefroy Road.—Across section 16, a mile or thereabout, was graded and generally improved.

Loclochc Creek Bridge.—On section ° con. 1, May township, a bridge was built and reported as a good and necessary work.

Laird Township Roads.—Some three miles and a half were generally graded and improved and fully described in the inspector's reports.

Lee Valley Road.—Half a mile was opened in the township of Hallam, Algoma District, across lots 6 and 7, con. 3, and was grubbed and graded.

Leaburn and Fraser Settlement Road.—In the township of Aberdeen, lots 4 and 5, con. 3, half a mile was opened through a rough and hilly section.

Manitowaning to Little Current Road.—Some three or four miles were clayed and gravelled in the township of Howland and Sheguindah.

Michipicoten Mining Roads.—Four and a half miles were improved on Mission Road, including gravelling, grading and bridging. On "Grace Mines Road," so-called, a mile and a quarter was thoroughly improved. Six miles were improved on the road to Michipicoten, Kitchegamie and Mauxeman gold mines, doing substantial work—and on Golden Reed Mine Road the entire length of three and a half miles was generally improved, representing a length of about fifteen and a half miles of work.

Mills Township and Burpee Road.—Half a mile was opened, ditched and improved, across lots 32 and 33, between concessions 6 and 7, Burpee. On Mills and Gore Bay Road three miles were gravelled, with another three quarters of a mile repaired in the township of Burpee.

Meldrum Bay to Gore Bay Road.—In the townships of Burpee and Dawson a long swamp was graded and gravelled to "Elizabeth Bay," and a mile and a quarter was also grubbed and gravelled north of Silverwater towards Meldrum Bay.

Massey Mine Road.—A mile was opened in Salter township, across sections 22 and 15, and on sections 20 and 13; in the same township a quarter of a mile was cut out and three-quarters of a mile graded.

May and Salter Town Line Road.—From the C.P.R. crossing eastward two miles of general gravelling.

May Township Road.—Across lots 5 and 6, con. 6, a mile was opened and generally graded.

Marsh River and Dean Lake Road.—In the township of Patton, between sections 29 and 30, two good bridges were built and included in half a mile of heavy grading.

Miscampbell Roads.—On the town line between Campbell and Crozier, opposite lots 7 and 8 and between lots 8 and 9, Miscampbell some three miles of work was done, largely the opening of new roads.

Mather and Dobie Town Line Road.—An estimated length of some four miles of repairs.

Mather, between Concessions 5 and 6, Road.—Some two miles of repairs and ditching.

Marks Township Roads.—About a mile of road opened across lots 8 and 9 in the 5th and 6th concessions.

Mine Centre Road and Bridge.—Some two miles of repairs in this unorganized district.

Morley, between 23 and 24, Road.—About a mile and a quarter of repairs.

McKinnon Township Road.—In concessions 5 and 6 some two miles of repairs were made. The road is really a deviation from the old road.

McPhee Valley Road.—In the township of Galbraith, lots 10 and 11, con. 1, half a mile of stumping and grubbing was done through a swampy section with double ditching and off take drains.

Northern Road.—From Thessalon on the main road half a mile was thoroughly reconstructed and gravelled, making a very permanent highway.

Nairn Township Roads.—General improvements upon several roads leading into Hymer and other points. The report represents the money as well spent.

Neebing River Roads.—Three miles were repaired with double and single ditching across six lots.

Nipigon River Roads.—Across Pine Portage three miles were opened as a cheap wagon road.

Nelles Road.—Across lots 3, 9, 7, 16, 17, 20 and 21, three miles of double and single ditching was done, with several culverts put in.

Ottertail and Gordon Lake Road.—In the township of Aberdeen, lots 11 to 15, con. 1, a road was opened 66 feet wide and grubbed 20 feet wide.

Pattullo, (between sections 5 and 8,) Road.—From the west side of sections 5 and 8 one hundred and seventy-five rods of grubbing was done with some corduroying.

Pattullo Road.—Some four miles of general improvements were effected in different sections of the township, representing good work.

Pearson Township Roads.—Some two miles of improvements in the township mentioned.

Plummer, Concessions 3 and 4, Road.—Some two miles were well repaired in three portions.

Prince Township Road.—In various portions about six and a quarter miles were gravelled and otherwise improved.

Parke Township Road.—Between sections 3 and 4 about a mile was opened.

Pennefather and Korah Town Line Road.—Over two miles were improved.

Patton Roads.—In the township about two miles and a half were generally opened.

Potomac River Bridge and Road.—In the township of Patton, on section 32, west, a mile and a half of was opened and half the length graded and ditched.

Parkinson and Montgomery Road.—Between lots 1 and 2, con. 6, Parkinson, ending at lots 2 and 3, Gladstone, over half a mile was opened and two small bridges built.

Poplar to Gore Bay Road.—A work not fully reported but understood to be about a mile of road opened.

Providence Bay to Kagawong Road.—A road in the township of Billings, lot 21, concessions 2 to 5. Two miles were generally graded, ditched and gravelled.

Providence Bay to Michael's Bay Road.—Four miles and a half on the main road were generally improved.

Paipoonge Road.—Between lots 15 and 16, concessions 3 and 4, half a mile was opened, graded and bridged.

Richardson and Tait Road.—Something like a mile of work through a low swampy section and the completion of two bridges on Tait and Mather town line.

Rock Lake (in Plummer) Road.—Across lots 6 and 7, in the third concession a mile or thereabout was opened.

Rose Township Roads.—Between sections 17 and 18, beginning on the town line between Plummer and Rose and eastward through section 18, thence north on section 17 a mile and a half of repairs was made, with a bridge over a ravine.

Roseberry and Shenston Town Line Road.—A mile partially opened across lots 1, 2, 3, to Indian Reservation.

Rose and Kirkwood Road.—In the township of Rose across sections 31 and 33 a quarter of a mile was opened, and improvements made with 500 yards of gravelling.

Sandfield Mills Road.—In Sandfield township half a mile of improvements were made on or near the 10th concession.

South Bay to Five Corners Road.—In Tehkummah township three miles of grading and gravelling.

Sandfield Township Roads.—General repairs covering some four miles

Salter, Through sections 20 and 21 Road.—A mile opened through a rather rough district.

Spanish Township Road.—In Sheddon township from Spanish station C.P.R. and section 35 north across sections 34 and 27, and thence across sections 27 and 22, thence east on 2nd concession, and thence northeasterly across a portion of section 23, about four miles were opened.

Sowerby and Kirkwood Road.—A mile and a half was graded and otherwise improved in the township of Day, between lots 7 and 9, in the fourth concession.

Salter, between Sections 28 and 29 and Sections 33 and 34.—A quarter of a mile was graded between the sections first named and two miles opened across the last named sections.

Silver Mountain Road and Bridges.—Through the townships of Gillies, Paipoonge and O'Connor, eleven miles were well repaired.

Strange Township.—Something about a mile of repairs.

Shenstone North Town Line Road.—The opening and double ditching of two miles through a low swamp and difficult of construction.

Sugar Lake Road.—From Walford north in the township of Saller, two miles chopped out last year were grubbed and graded, making a good general highway.

Scoble Road.—Between lots 9 and 10, concessions 1 and 2, three-quarters of a mile was graded, opening altogether a mile and a quarter.

Sandford Township Road.—A road between Oxdrift and Eagle River from the main road, between lots 2 and 3, south to Minnetaki Lake on the C.P.R., more than a mile was opened.

Tait and Mather Town Line Road.—From between lot 12 and section 13 to the north boundary of the townships, four miles were graded and well improved, including a bridge built over Pine River.

Tait and Pattullo Town Line Road.—Something like a mile was graded, double ditched and made a generally good road.

Tehkummah Roads.—General repairs amounting to 3 or 4 miles, the work being on Manitoulin Island.

Tarbutt and Johnson Township Roads.—A heavy hill was graded on lot 2, con. 4, and between Tarbutt, and Tarbutt Additional, known as Port Finlay Road, further general improvements were made. On Johnson location a mile was opened, and on Garden River Road half a mile was graded, representing about one mile of new and two and a quarter of repairs and general improvements.

Thessalon Road.—In the township of Lefroy, between sections 14 and 15, a mile was graded with clearing and necessary culverts. A mile was also opened on section 14, sixty-six feet wide, thirty feet of which was cleared of all stumps, and well graded.

Tarentorus Township Roads.—Under a by-law some two miles were opened.

Vermillion River Road.—In the township of Fairbank, lots 1 and 2, con. 5, grading was done for a mile or thereabout.

Wells Township Road.—Some four miles were graded and generally put into good general condition.

West Bay Road.—From lot 2, con. 9, Billings, to lot 24, Bidwell, on Manitoulin Island, three miles of general improvements were made.

Woodyatt Road.—On the south boundary of Devlin, about a mile of clearing, ditching and grubbing was effected for the small sum of about one hundred dollars.

Zealand Road.—Between lots 17 and 19, con. 5, general improvements were made over a length of nearly two miles.

West Division.

Armour, 10th Side Line Road.—Half a mile opened and graded.

Armond and Ryerson Boundary Line Road.—Half a mile chopped out between concessions 10 and 11, lots 1 and 2, Ryerson.

Beveridge Hill and Road.—In the township of McDougall, across lots 15 and 16, in first concession a hill was cut down and a bridge repaired.

Burk's Falls Road.—In the township of Armour, a mile and three-quarters were repaired between concessions 6 and 7.

Bethune, 8th Concession, Road.—Nearly a mile of work from lot 8 to lot 10, consisting of grading and crosswaying.

Blackstone and Conger Township Roads.—About a mile was made, partly as a contract, assisted by voluntary work by settlers, and two miles were also improved between Blackstone and Portage Lakes.

Byng Inlet Road.—From Byng Inlet village to the Canadian Northern Railway station, general improvements were made.

Brudenel-McLean Roads.—A work in Brudenel from lot 13, con. 8, to lot 14, concession 13, representing over three miles of general improvements.

Baxter-Gibson Roads.—In Gibson, a mile and a half was improved, largely with a grading machine, and in Baxter, three miles and a half were generally repaired and opened from lot 19 to lot 23, concessions 9 and 10, and other portions.

Booth Line Road.—A work in the township of Orillia from lot 14, concession 5 to lot 24 in the same concession, and representing something like four miles of general improvements.

Balkwell Road.—In the townships of Matchedash and Orillia, through concessions 3 and 4, general repairs were made over several miles.

Chapman Concession 11 Road.—On lot 11, concession 11, three-quarters of a mile of grading.

Commanda Lake Road.—A mile was opened in the township of Pringle, in the 2nd concession, reaching to the township of Patterson.

Chapman Road.—From the boundary of the township of Strong, lot 1 to lot 5, concession 11, a mile and a quarter of practically new road was made.

Christian Valley Road.—Half a mile of generally new work was done across lots 12 to 14 between the 14th and 15th concessions of the township of Nipissing.

Chisholm and Himsworth Townline Road.—About a mile graded.

Centre McKeller Road.—A mile and a quarter of very inferior road was well improved, requiring a considerable amount of blasting.

Cardwell, Chaffey Roads.—On North Cardwell road in the township of Cardwell, from lot 20 to the township of Monteith, three miles were graded, and between lots 5 and 10, concessions 4 to 9, four miles were well improved with a grading machine.

Dillings Port Carling Road.—Two miles repaired across lots 32 to 37, concessions 7 and 8, in the township of Carling.

Distress River (in Strong) Road.—Across lots 12 to 15, and between concessions 8 and 9 of the township of Strong, more than a mile of repairs were made.

Draper-Ryde Roads.—In the township of Ryde, between lot 25, concession 8, and lot 25, concession 13, three and three-quarter miles were graded and generally repaired. In the same township, on lot 5, between concessions 7 and 10, two and a half miles were improved, and in the township of Draper two miles were repaired through concessions 5 to 8.

Franklin and Sinclair Roads.—Nine miles and a half of repairs were made in various portions of the above two townships for the general benefit of settlers.

Ferguson and Burpee Roads.—In the township of Ferguson two miles and a half were generally improved.

Ferris and Himsworth Townline Road.—Two miles were improved in South Himsworth township across lots 11 to 15, between the 20th and 21st concessions.

Goose Neck and Whitestone Valley Road.—In the township of McKenzie, lots 9 to 32, and to Burpee township, two miles and a half were repaired.

Great Northern Road.—Two miles were repaired in the township of Croft, and of a very permanent character, and on the same road in the township of Ferguson, three miles were improved.

Gully Bridge.—On lot 18, concession 4, in the township of McKellar, a large culvert was made to take place of the bridge, making a very permanent road.

Himsworth Township Roads.—Two miles were repaired across lots 8 to 21 in the 7th concession, and altogether, in addition to the above, about three and a quarter miles were repaired, and half a mile of new road opened on various roads.

Healey and Orange Valley Road.—On lot 10, concession 10, Christie, an old bridge was supplanted by a culvert 40 feet long, with a 6 feet opening, with some other general repairs.

Hagerman Road.—On lot 35, between concessions 7 and 8, three-quarters of a mile was opened.

Humphrey Road.—On the boundary between Christie and Humphrey, lots 10 to 17, something like half a mile of heavy work was done.

Joly and Strong Road.—Half a mile graded, from lot 31, Strong, to lot 1, Joly.

Laurier Road.—On lots 11 and 12, concession 14, three-quarters of a mile was ditched and graded.

Lacasse Road.—In the township of Caldwell, from between lots 3 and 4, concessions 3 to 6, three miles were cleared generally.

Morris and Wood Roads.—In Wood township, between lots 8 and 15, in the 5th concession, repairs were made for about two miles and a half, and between Muskoka and Wood, five miles were improved; also, on the 10th concession of Morrison, lot 25, four miles and a half were repaired, using largely a grading machine.

Medora-Port Carling Roads.—In the township of Medora, some thirteen miles and a half were generally improved on the 1st and 2nd concessions, and on the townline of Muskoka, to Clear Lake.

Monck-Watt Road.—In the township of Watt, from the townline of Medora to lot No. 17, five miles and a half were graded with a machine grader, and on the Port Carling Road in Monck, between lot A and lot 8, two and a half miles of improvements.

Macaulay Road.—From lot 25, concession 7, to lot 27, concession 9, Macaulay, on the Port Sydney and Baysville Road, two miles and a half were improved.

Mills, between 25 and 26 Road.—On the 25th sideroad from concessions 11 and 12, some 43 rods of crosswaying were laid, and a quarter of a mile of new road opened.

Middle River Bridge on Balsam Road, Hagerman Township.—A new bridge, 49 feet long was built, with filling at each end. Repairs were also made on lot 26, concession 5, McKellar.

Monteith and Perry Road.—Two miles and a half were repaired between lots 10 and 18, concession 10 in the township of Monteith.

Machar 30 Side Road.—A road about Eagle Lake a mile and a quarter long and ditched, making a new road.

Muskoka (north of Ardray) Road.—Three-quarters of a mile of gravelling to make a good road over a sandy plain. The material necessary was hauled about a mile and a half.

Matchedash Road and Bridges.—Across lot 5, concession 2, the length was gravelled, and opposite lots 1, 2, 3, gravelling was done. On the sideroad between lots 6 and 7, concession 3, half the length was gravelled. On the 5th concession, a bridge was erected and a new road opened across lots 10, 11 and 12; and between lots 6 and 7, concession 2, the road was opened and prepared for gravelling.

Monck Road, West of Atherly.—Three hundred yards of crushed stone were laid and thoroughly rolled. The material for the above was hauled some two to four miles.

McDougall and Carling Townline Road.—On the boundary between McDougall and Carling, half a mile was opened, ditched and graded.

McMurrich 25th Side Road.—Half a mile was opened on the 25th sideline in the 9th concession, and a further length of nearly half a mile was opened on lot 27 in the 11th concession, to complete a work done some years ago.

McMurrich and Ryerson Townline Road.—On the townline named, across 16 to 18, about half a mile was improved.

McMurrich 6th and 10th Concessions.—A mile was improved across lots 20 to 25, concession 10, including a new bridge 28 feet long; and another mile and a quarter was opened in Monteith township.

McKellar Village Road.—A mile and a half repaired in the township of McKellar, between lot 5, concession 1 to 12th concession.

McKellar and Christie Road.—Between lots 26 and 29, concession 2, McKellar, half a mile of grading was done and two miles were repaired as a completion of last year's work. The latter was between lots 30 to 32 in the 2nd concesssion of the above-named township.

McDougall and Leatherdale Road.—A work in the townships of Orillia and Medonte, lots 23 and 24, and also on lot 21. From the Inspector's report the repairs have been very permanent and equal to about one mile.

Novar and Bethune Road.—A mile and a half of road repaired across lots 25 to 29 in the 2nd concession of Perry.

Nipissing Road, Monteith and Spence.—About a mile and a half of repairs were made from lot 22, Monteith, to lot 28, Spence; and in Spence township five miles and a quarter were repaired.

Nipissing Township Roads.—A mile and a half was repaired between lots 11 and 15 in the 10th concession, and between 15 and 19, a road begun last year has been opened.

Nipissing 19th Side Road.—Three-quarters of a mile opened, graded and improved, between lots 10 and 11, concessions 9 and 10 in the above township.

Orrville and Orange Valley Roads.—From lot 4 to lot 9 between concessions 11 and 12, some two miles were repaired in the township of Spence.

Oakley, McLean, Ridout Roads.—In the township of McLean, on lot 17 across lots 7 to 12, two miles and half were improved; and on the Baysville and Bracebridge Road, three miles were repaired. Half a mile was improved between lots 11 and 12 in the 8th concession, with another half mile across lots 3 and 4, concession 10.

Parry Sound to Concession 6, McDougall Road.—Two miles and a half were repaired across lots 1 to 21, concession 6, township of McDougall.

Parry Sound Road.—A mile and a half well repaired in the township of Humphrey, across lots 36 and 36 in A and B concessions.

Proudfoot Road.—On lot 8, concession 8, Armour, a deviation was made on the side of a heavy hill covering about 500 yards of excavation, and the total length of improvement for some half mile.

Perry and Monteith Road.—In the township of McMurrich from lots 7 to 11, concession 10, about two miles were repaired.

Perry and Monteith Roads.—A mile and a half was repaired in the township of McMurrich and a bridge also built; and in the township of Perry, half a mile was made as a deviation and a mile and a quarter, repaired.

Port Carling Road.—A work in the township of Monck from lot 15, concession 11 to lot 5, concession 9, a length of three and a half miles. A road grader was used, and excellent work reported.

Port Severn Road.—Work in the township of Tay from lot 13 to lot 15, and being half a mile of general gravelling and grading.

Ryerson between lots 5 and 6 Road.—Half a mile was repaired across lots 5 and 6 in the 6th concession.

South Seguin Bridge.—About 13,368 feet B.M. was used as planking for bridge on lot 10, concession 4, McDougall.

South Himsworth Roads.—Between lots 5 and 10, concession 10, a mile and a half was generally graded, and on lot 31 between concessions 4 and 5 a mile and a quarter was opened and fairly improved.

South Himsworth Bridge.—On lot 1, concession 2, a bridge 42 feet long was erected upon abutments of stone and cement, eight feet high, and with twenty rods of road opened as approaches represents a good work for the expenditure.

Scotia Junction Road.—In the township of Perry on lot 17, concession 17 and 18, a quarter of a mile of repairs was made.

Savage Settlement and Kearney Road.—In the township of Proudfoot, on the 10th Side Road, and ending on the 4th concession, a road was opened and partially graded, and in Perry township, over lots 25 to 33, some three miles were brushed out and improved.

Strong 20th, 13th and 3rd Side Line Roads.—A mile and a quarter was chopped out as a new road between concessions 9 and 10 and lots 9 to 13: between concessions 12 and 13, lot 21, a mile and a quarter was graded and gravelled: and a new road was opened a mile and a quarter long on lots 8 to 11 in the 5th and 7th concessions.

Strong and Joly townline Road.—A mile and three-quarters were opened and generally graded from lot 12 Strong to lot 1 Joly on the 13th concession.

Strong and Machar townline Road.—Over lots 17 to 19 on the said boundary about a mile and a quarter was opened.

South River Bridge in Joly.—A bridge originally 309 feet long was reduced to a length of 109 feet. The balance being filled with permanent material.

South River and Surprise Lake Road.—In the township of Machar, lot 19 to 21, concessions 3 and 4, three-quarters of a mile was repaired and a mile and a half repaired in the same township from lot 3, concession 2 to lot 1 Laurier.

Spence and Ryerson 4th Concession Road.—Three miles and a half were repaired across lot 13, concession 23, Spence to Ryerson township.

Stisted-Stephenson Roads.—Two miles of work was done upon a road in the township of Stisted and used in lieu of McMurrich townline, and is from lot 1 to lot 5, Cardwell. Three miles of repairs were also made between lots 3 and 6, concessions 4 and 5, while in the township of Stephenson, from lots 13 to 16, concessions 11 to 14, three miles were improved.

Temperance Road.—In the township of McDougall across lots 26 and 27 in the 1st concession, a mile and a half of repairs were made.

Westphalia Road.—In Gurd township across lots 22 to 25, concession 3, two miles and a quarter were opened, and across 26 to 29, an equal distance was cleared.

Whitestone Valley Road.— Five miles of repairs across lots 1 to 22, concession 2, McKenzie.

Wilson, Mills and McConkey Road.—Eleven and a half miles were chopped and generally graded in the townships of Mills, Wilson and McConkey, and portions of Browne and Walbridge to Walbridge station on the railway.

Whitehall Siding Road.—In the township of McMurrich between lots 27 and 30, in the 10th concession, a quarter of a mile was repaired.

Washaga and Wardell Road.—Over three hundred loads of gravel were hauled nearly four miles to grade and improve the road between lots 10 and 11, concession 16, of North Orillia, in length something like half a mile.

East Division.

Appleby Road.—From lot 5 to lot 9, concessions 8 and 9, a mile and a half was graded.

Almond Creek Bridge and Road.—The re-building of a bridge one hundred and fourteen feet long with approaches in the township of Cameron, lot 16, B concession.

Anstruther Township Roads.—Ten miles were improved across lots 6 to 16, with other general repairs.

Airy Township Roads.—Between lots 15 and 16, through concessions 5 and 6, a mile and a quarter was repaired, and upon a road leading to the Canada Atlantic Railway, to Whitney station a mile was opened.

Arden and Harlow Road.—A new road was opened for a total length of a mile and a half across lots 21 to 26 in the townships of Kennebec.

Addington Roads.—Four miles and a half were well improved between lots 21 and 24 Denbigh, and lot 36 towards the head of the lake, a portion being practically new work.

Alice Roads.—Between lots 20 and 21, a mile and a quarter of general improvements were made, and across lots 12 and 14, concessions 12-14, repairs were effected. Half a mile was repaired across lots 25 to 26 in the 16th concession, and across lots 5, 6 and 7, concession 10, to lots 8 and 9, concession 1, were general repairs. On lot 26, concession 10, repairs were made, and between concessions 10 and 11, and on lot 9, a heavy hill was cut down and gravelled. A mile and a quarter was graded on concessions 15 and 16, lots 22 and 23, with several culverts; and on lots 34 to 36, Range A, a mile of improvements were made. A mile was brushed and generally gravelled on a line between lots 20 and 21, and a hill cut down and generally repaired on lot 7 in the 7th and 8th concessions; and with some general gravelling on lot 10 on the 1st Proof Line, represents a considerable amount of work.

Bromley Township Roads.—In the fifth concession, about a mile of work was done, and across lots 5 and 6, concessions 3 and 4, a mile and a quarter on what is known as Ross and Douglas Road has been opened and made generally passable.

Brudenell Telegraph Road.—About two miles have been generally repaired across lots 10 and 11, concession 6, and lots 14 and 15, through concessions 5 and 6, in the township of South Algona.

Black Duck Creek Road.—Across lots 25 and 26, in the twelfth concession, of South Algona, three-quarters of a mile of repairs were made.

Bellamy Road.—From lot 14 to lot 16, con. 3, Pakenham, about two miles of general repairs were made.

Battersea and Jones Falls Road.—About a mile and a quarter of improvements in the township of Storington, on lot 16, between the 10th and 11th concessions.

Base Line and 6th Concession Road.—On Wolfe Island, six miles were repaired from lots 2 and 3 to concessions 6 and 15.

Brudenell from 2nd Concession Road.—In the third concession general repairs were made with a considerable length of ditching.

Branch Road, Brudenell.—From lot 18, concession 9, Brudenell, improvements were made between Rockingham and Brudenell villages, representing something like four miles of work.

Bagot and Admaston Springtown Road.—About a mile of gravelling was done between concessions 3 and 4, on lot 1.

Black Donald Road.—Over lots 14 to 16, concession 6, Mattawatchan, about half a mile was graded and generally improved.

Blezard 5th and 6th Concessions and Drain.—On the concessions mentioned, grading, draining, culverts and brushing was, the inspector says, very satisfactorily done, covering about six miles.

Badgerow, between lots 2 and 3.—Clearing and grading for about three-quarters of a mile from concessions 3 to 5, ending at lots 7 and 8.

Border, 3rd Concession, Road.—Between lots 9 to 12, on the above concession, general grading was done representing about a mile of work.

Bazinet Road, between Concessions 1 and 2, Kirkpatrick.—General repairs were made.

Beaudry Bridge.—In the township of Caldwell, a bridge was erected over Beaudry Creek.

Bastedo Road.—Three-quarters of a mile of grading in the township of Grant, between lots 9 and 11, in the 3rd concession.

Barrie Road in Barrie Township.—From lot 25 to lot 29, in the 6th and 7th concession, about a mile and a half of repairs were made of pretty heavy and important work.

Babcock and McLean Road in Olden.—Three and a half miles were generally improved from lot 3, through concessions 2 to 6, in the above township.

Bancroft and Herman Road.—A work in the township of Dungannon, lot 10, concession 10, ending at lot 13, concession 11, something like a mile and a quarter of improvements were made.

Bassmer and Long Lake Road.—The draining and building culverts with general clearing was made for a length of a mile in the township of Mayo, across lots 14 to 18, in the 18th concession.

Burgess Mine Road.—From the Peterson Road, eight miles east of Maynooth to Armstrong Mills in the township of Carlow, six miles were improved to Maynooth station, on the Central Ontario Railway; from the Corundum Mines.

Bancroft and Maymouth Road.—In the townships of Monteagle and Herschell, over lots 45 to 80, Hastings Road, some six miles of improvements were effected.

Bancroft-Cochill Road.—Improvements were made for some two miles in Faraday township, lots 15 and 16, concession 1 to the 15th concession.

Bangor Township Roads.—From lot 15 to lot 20 and concessions 7 to 11, about a mile and a half was well repaired, and across concessions 4 and 8, and lots 9 and 10: twelve cedar culverts were put in and the road generally improved.

Belmont Township Roads.—Between concessions 5 and 6, lot 5, more than a mile was thoroughly macadamized from rock crushed by a machine

supplied by the municipality; and between lots 22 and 27, concession 9 eighty rods of grading and an equal length of clearing and stumping was done.

Buckhorn Road, South.—About a mile and a half of repairs were made in the township of Harvey, for the sum of about $300.

Black River Road, in Dalton.—Between lots 1 and 10, and concessions 10 and 11, two miles were generally improved; and across lot 30, concession 13, there was a quarter of a mile of blasting and grading.

Boulter Township Roads.—Three-quarters of a mile in the township of Boulter, from lot 5 to lot 8, in the 13th concession was improved; and Depot Creek Bridge was re-built, 66 feet in length. Three-quarters were graded and drained on lot 20, over concessions 10 and 11; and on the 12th concession over lots 33 and 35, over half a mile was drained and graded.

Bonfield Township Roads.—A work divided into several sections, the work aggregating about 6 miles of general repairs.

Boulter and Bonfield Town Line.—Between lots 4 and 8, half a mile was well improved.

Burleigh and Anstey Roads.—In the township of Burleigh the work was on lot 7, concessions 4 to 6, where very permanent improvements were made; another outlay being for rock crushing with a machine, where a mile and a quarter was repaired.

Chisholm Township Roads.—General improvements were made upon various concessions and lots amounting altogether to five and three-quarter miles.

Calvin Township Roads.—Eight and a half miles were repaired in this township over about ten sections, which included drainage, bridge building, and general grading.

Cameron Township Roads.—Three-eighths of a mile of clearing, grading and drainage was done between lots 4 and 6, concession 24. Between lots 1 and 9, concession B and lot 25, a mile and a quarter of general repairs were made, while across lots 11 to 13, concession 24, over half a mile was graded and drained.

Calvin and Bonfield Town Line Road.—Across concessions 3 to 6, lot 35, two miles and a quarter were graded and drained.

Carden and Mara Town Line.—Two hundred and eighty rods have been turnpiked with necessary outlets for drainage, while general repairs were made in A concession, between the 11th and 13th concessions of Mara.

Carden Roads.—On lots 3 and 4, and concessions 3 and 4, again across lots 8 to 10 between concessions 3 and 4, and between lots 5 and 8, concession 8, two miles and a quarter were generally repaired.

Cavendish Township Roads.—About four miles were repaired across lots 17, 18, 15 and 16, between concessions 17 and 18 and the 3rd and 4th concessions.

Chandos Township Roads.—General repairs made, estimated at about five miles.

Corunda Mine Road.—Across lots 2 to 8, concessions 8 to 11, general work was done, including the building of 21 culverts, with ditching and grading.

Cashel Road.—In the township of Tudor, lot 5 to lot 8, concession 18, a good roadway was well opened, and with cross-waying, a very permanent highway has resulted.

Cross Lake and Madawaska Road.—About two miles of general repairs were made in the townships of Lyell and Murchison to the Madawaska Railway station, on lots 17 and 16, in the first concession.

Chaffey Locks and Opinicon Road.—In the townships of Bedford and South Crosby, three miles were graded and gravelled.

Crowe Lake Road (St. George Lake).—In Bedford, lot 27, concessions 1 and 2, two miles were graded and generally improved.

California Road in Camden.—Two miles of general improvement, consisting of grading and ditching was done in the township of Sheffield, from lots 6 to 11, in the 14th and 15th concessions.

Cruse Road, Canonto.—In the townships of South Canonto and Palmerston, three and a half miles of grading and ditching was done.

Capreol, 3rd and 4th Concessions.—One mile of corduroying was laid on the 4th concession, with a mile and a half of grading.

Caldwell and Badgerow Town Line Road.—A quarter of a mile graded on the town line mentioned.

Cassimir, between Concessions 4 and 5.—Between lots 9 and 11, a mile of repairs were made, stumping and stoning half a mile.

Cosby, between 2nd and 3rd Concessions, Road.—From lot 5, concession 3, to lot 8, concession 8, about a mile of grading and general drainage.

Cosby and Martland.—On the town line between the above mentioned townships, about one mile of grading and general repairs were effected.

Clontarf Road.—A mile of good general repairs in the township of McNab, on lots 9 and 10, in the 4th concession.

Calabogie and Springtown Road.—In Bagot township, on lot 19, concession 7, about a mile of general grading was accomplished.

Cache Bay, Booth Road.—In the township of Springer, across concessions 2 to 5, two miles were opened, graded, and half a mile of the length covered with gravel. In the township of Field, on what is locally known as Booth Road, lots 11 to 15, concessions 3 and 5, three miles were cleared, graded, and the road well drained. A bridge one hundred and eighty-five feet long was built upon cedar piles as a sub-structure, with height of 24 feet.

Cassimir, North Boundary.—Half a mile graded on Cassimir and Dunnett town line.

Crowe Lake Road.—In the township of Osler across lots 7 to 10, concessions 4 and 5, general repairs were made.

Constance Creek Road.—General improvements were made on lot 5, first Proof Line Centre, lot 6, in the 5th and 6th concessions of the township of Tarbolton, general repairs were made—about a mile and a quarter of work altogether.

Darling and Lanark town Line.—In the township of Lanark, two miles were generally improved.

Darling, 8th Concession, Road.—A new road was opened on the concession above named, and a new bridge, with a considerable amount of crossweying.

Douglas and Mount St. Patrick Road.—In the township of Admaston, across lots 11 and 12, concessions 13 and 14, about two miles and a half were repaired.

D'Acre and Caldwell Road.—Two miles were improved in the township of Grattan, in the 5th concession, across lots 4 and 5.

Delamere, South Boundary.—In the townships of Massom and Delamere, over lots 2 to 10, a mile and a quarter was opened and graded and another mile was generally opened in the same direction. Another mile was cleared and graded with an extra mile of improvements in removing rock from creek and other work.

Dunnett and Appleby Boundary Road.—Two miles repaired with drainage.

Dunnett, between Lots 6 and 7, Road.—General repairs.

Dunnett, 2nd and 6th Concessions, Road.—The grading of a quarter of a mile in concession 6, with a mile of repairs on lots 3 to 5, in the 5th concession.

Dummer Township Roads.—From lot 11, concession 9, to lot 23, in the same concession, three miles of repairs were made.

Dalton Roads.—Three miles of general repairs were effected in the township of Dalton and between Eldon and Mara and the work fully reported by the inspector.

Enright Settlement Road.—Two miles of work in the township of Admaston.

Eganville-Donegal Road.—In the township of Grattan extensive repairs were made on lots 32 to 35 in the 18th concession. It is the main road to Eganville and represents about two miles of work.

Eil Lake Road.—Some general work in the County of Frontenac.

Eganville and Killaloe Road.—One mile of new road was opened, and about a mile and three-quarters of repairs, mostly on the road named, but work was also done in the township of Hagarty over two sections.

Forced Road, between Lots 32 and 33, Hagarty.—General repairs were made.

Fourth Concession, Raglan to Boundary, between Raglan and Way's.—On lot 4, Raglan, a road was opened across lots 5 and 6 into the 3rd concession, Ferguslea and Shamrock Road. In the township of Admaston, lot 7, and over concessions 4 and 5, the road was graded and a rough and rocky hill cut down and gravelled.

Ferguson Lake and Mount St. Patrick Road.—A rough and rocky section was well improved in the township of Blythfield, over lots 26 and 28, in the 2nd concession.

Fifth Concession Line, Horton, Road.—The gravelling of a road on lot 4, concession 5 ,and lot 4, concession 4, more than half a mile.

Ferris Township Roads.—Five miles of repairs were made in nine various portions of the township and fully reported as to the exact location of work by the inspector.

Fish Creek Road in Palmerston.—From lot 19, concession 8, to lot 18, concession 7, a new road was opened for about a mile in the township mentioned.

Faraday and Herschell Boundary Road.—About a mile of repairs from lot 12 to lot 15 on the above mentioned boundary, and reported as very satisfactory work.

Germanicus Road.—Some two miles of general repairs.

Golden Lake Road.—In the township of South Algona, lots 4 and 5, concession 8, a road was opened around a bad hill.

Glamorgan and Cardiff Roads.—Ten miles of repairs in the townships indicated, that is to say, on White Lake Road, $200 were spent: and on Monck Road $300, from lot 13 to lot 20, in the fourth and fifth concessions. On Monck and Buckhorn Road, between lots 12 to 24, concession 7, Glamorgan, and from the boundary of Dysart to concession 8, general repairs were made; while in Cardiff, from lot 25, across concessions 20 to 22, a bridge was built and other general improvements.

Galway Township Roads.—Between lots 10 and 15, concession 8, a mile and a half was improved, and between concessions 12 and 13 on lot 4, several small bridges were built and other repairs made. About four miles were

improved in concessions 10 and 11, lots 2 to 20, in various sections; and between concessions 10 and 11, across lots 11 and 12, three-quarters of a mile was repaired. On the 4th and 5th concession line to Silver Lake, and the Bobcaygeon Road in Kinmount, about two miles were generally improved, and through concessions 16, 17, 18, on what is known as Jackson Road, about a mile was well repaired, with another five miles from lot 8, concession 16, ending at the 14th concession, making altogether 14 miles of road.

Gibbons Road.—Between concessions 1 and 2, on the 3rd concession across lots 6 to 10, a mile was well graded, and from lots 8 to 11, in the 3rd concession, a mile was improved.

Gibbons and Bastedo town line.—Two miles were well graded and drained between concessions 2 to 4, on the above boundary.

Grattan Roads, 6th Concession.—On the 6th concession, across lots 3 to 5, general repairs were made for about a mile and a quarter, and another mile and a half were repaired between lots 26 and 36—two miles and three-quarters altogether.

Green Bay Road in Bedford.—Three and a half miles of grading and ditching from lot 21, concession 2 to the fourth concession.

Gore Line Road.—Across lots 8 and 10, concession 4, about a mile was graded and gravelled.

Howe Island Road.—General work was done, amounting to about one mile of improvements.

Hinchinbrooke Road.—The grading and gravelling of some two miles and a half between lot 6, concession 9 and lot 11, in the 11th concession.

Hagarty, between 10th and 11th Concessions.—General repairs.

Horton Township Roads.—From lots 11 to 13, concession 6, general improvements were made for something like a mile and a half.

Hagarty and South Algona town line.—A new road was opened through a swamp on lot 1, concession 1, Hagarty, to lot 32, concession 7, South Algona.

Horton and Admaston town line.—Gravelling between lot 10, Horton, and lot 16, Admaston, a length of a mile and a quarter, making, as reported, an excellent road.

Hyde Chute and Sanson Road.—In the township of Griffith, lots 30 to 26, concessions 4 to 6, general repairs were made, and gravelling and draining with some rock blasting.

Hugel and Crerar Boundary to Sturgeon River.—A work in the township of Hugel, between lots 10 and 11, concessions 4 and 5 representing a mile of new road.

Hugel, between Concessions 1 and 2.—Half a mile was cleared, graded and drained, across lots 3 and 4, between 1st and 2nd concessions.

Harlow and Cloyne Road.—In the township of Barrie half a mile of gravelling was done with other work, between lot 4, concession 2, and lot 33, in the same concession.

Horseshow and West End Road, Kennebec.—In Kennebec, between lot 7, concession 5, and lot 8, concession 3, about two miles of grading and general repairs were made.

Hinchinbrooke, 4th Concession Road.—Six miles of repairs, between lots 14 and 22, on or near the 4th and 5th concessions.

Hybla Station Road.—In the township of Monteagle, lot 21 to lot 24, concession 8, clearing, crossways, grading and stumping, amounting to about one mile.

Herschell Township Roads.—A mile and a half was well improved and other necessary work done, across lots 11 to 19, in the third concession.

Hastings Road and Egan Creek Bridge.—In Dungannon township on the Hastings Road, Egan Creek Bridge was renewed with three piers, 60 feet of covering and one hundred and ten feet of approaches. There were also about three miles of repairs made between 7 to 12 on the same road and township.

Hastings Road.—Repairs in the township of Lyell, from lot 2, northward, some six miles.

Hastings Road to Egan Estate.—In the townships of Monteagle and Herschell, repairs were made over some ten miles.

Harvey Township Roads, north and south divisions. For the expenditure of about $1,400, seven miles and a half were improved in various portions of the township, north and south and fully reported as to the exact location of each separate work.

Inverary and Battersea Road.—In the township of Storrington, between lots 22 and 26, in the 4th concession a mile and a half of repairs were made. Forty cords of broken stone were used in the work.

Jennings and Appleby Boundary.—About three-quarters of a mile was opened between lots 7 and 12, including the construction of several culverts.

Jones Falls and Battersea Road.—Four miles and a half were repaired in the township of South Crosby, over the 6th to the 10th concession of lot No. 6; excellent work is said to have been done.

Jones Falls Road.—In South Crosby, across lots 8 and 9, concession 5, general repairs were made over about half a mile.

Kirkpatrick, Concession 6, Road.—Across lots 1 to 5, in the 6th concession, a mile and a half was opened as a winter road.

Kirkpatrick, between lots 8 and 9.—Half a mile was graded and drained between lots 7 and 8, in the 2nd and 3rd concessions.

Lanark Township, 10th concession, Road.—Half a mile was opened on lots 3 and 4, concession 9, and lots 13 and 14, Range R, the object being to shorten the distance for settlers in visiting Carleton by at least three miles.

Lyndoch and Foymount Road.—In the township of Lyndoch, lots 2 to 4, concessions 5 to 7, about two miles were well improved.

Lyndoch and Raglan Road.—In the township of Brudenell on lot 17, concessions 3 to 5, general improvements were made over a rough section, covering about a mile and a quarter.

Line between Hagarty and Sherwood.—General repairs for an expenditure of about $200.

Labrosse and Badgerow Road.—Some four or five miles of general repairs.

Larocque Road.—In the township of Field on lots 8 and 9 in the 6th concession, half a mile was cleared and graded.

Leduc Road.—An estimated length of about three miles of repairs.

Long Lake Road, Brodeur township.—Four miles were repaired in the said township of Brodeur.

Landing to Monetteville.— Work in the township of Martland, between lots 6 and 7, through concessions 4 and 5, representing a mile of grading and drainage.

L'Amable and Bancroft Road.—General repairs were made on Hastings Road in Bancroft, between lots 43 and 54—some three miles.

L'Amable and Fort Stewart Road.—A work in the township of Mayo between lots 1 and 4, concession A, where a mile and a quarter was opened, representing very heavy work.

Lyle Road to Madawaska.—In the township of Lyle from lot 17, concession 1 to lot 10, concession 5, general repairs were made for something like three miles.

Lonsdale and Lyon Lake Road.—On the boundary between Hungerford and Thyendenaga, general repairs were made, chiefly the laying of five hundred and ninety-one yards of gravel.

Lake Doré Road.—Between lots 9 and 19, concessions 9 and 10, a mile of gravelling was done, and the length put into excellent condition; and other work was done on the 3rd concession of Alice, representing altogether about two miles of general improvements.

Line between townships of Lyndoch and Sebastopol.—Grading and general repairs were made in the township of Sebastopol across lots 12 to 14 in the 16th concession, altogether about two miles.

Montague and Elmsley Road.—About two miles of road were put into excellent condition crossing lot 5 in concession 2, and lots 1 to 7 in concession 6, in North Elmsley township, with other work in the township of Montague.

Mattawa and Pembroke Road.—In the township of Head, between lots 1 ad 21, concession A, general repairs were made aggregating about a mile of grading; and more than half a mile was drained, gravelled and the road cleared twenty-four feet wide.

Methuen Township Roads.—Oak Lake Road on the 7th concession was repaired for over three miles; three miles were also repaired in the 6th and 7th concessions; fires caused much destruction on the road after the repairs were made, making, the inspector says, a road yet unfit for general traffic.

Monmouth, Sherbourne and Snowdon Roads.—For the expenditure of the grant of $1,500, thirteen miles and a half of general improvements were made in the townships above named and reported in detail by the inspector and understood to be very satisfactory work.

Minden, Lutterworth, Ansen and Hindon Roads.—Sixteen miles of general repairs and improvements were made in the several townships referred to. The detail of work is fully reported by the inspector.

Mississippi Road, Denbigh and Abinger.—A work in the township of Abinger from lot 17, concession 1 to intersect with the Addington and Denbigh Road, and consisting of general repairs.

Mountain Grove and Long Lake Road.—About two and a half miles of grading and improvements were made between lots 6 and 11 on the 3rd and 4th concessions in the township of Olden.

Mountain Road in Miller.—A work from lot 6 to lot 19, consisting of general repairs.

Morton and Jones Falls Roads.— Three hills were cut down and blasting and ditching on lot 5, concession 6, South Crosby.

Mattawan Township Roads.—From lot 32 to lot 35, concession 6, half a mile was graded and drained for an expenditure of $150; between lots 33 and 34, concession 9, three-quarters of a mile was graded; on the 2nd concession, on lot 31, three hundred and five yards were cut down and improved; between lots 32 and 39, concession 4, a mile and three-quarters of grading and general repairs were made, and between lots 25 and 30, concessions 10 to 13, a mile and three-quarters were repaired; about five miles altogether.

Mattawa and Bonfield Road.—In the township of Papineau, general improvements were made for a half a mile and about three-quarters of a mile between lots 16 to 26 in the same township was generally gravelled.

Martland Road.—Between concessions 2 and 3, and lots 2 and 3, about a quarter of a mile was filled in to a depth of about three feet and generally graded and improved. In the township of McPherson, between lots 2 and 3, concession 2, about five hundred feet of logs, stone and gravel were put

in to make a good passable road. Again, on Martland and Scollard Road, half a mile was cleared and graded with half a mile of ditching.

Monetteville Road.—On the 5th concession from lots 4 to 6, three-quarters of a mile was graded and half a mile grubbed and stumped.

Musklow Road.—General repairs in the township of Sebastopol, lots 19 and 20 in the 3rd and 4th concessions, representing about a mile and a quarter of repairs.

Mount St. Patrick and D'Acre Road.—The repair of two miles in the township of Brougham on lots 14 and 15, in the 18th and the 19th concessions.

Main Opeongo Line, D'Acre to Davidson's.—In Gratton township about three miles were repaired on the Opeongo Road.

Mast Road in Bedford.—From lot 14, concession 5 to lot 16, concession 4, Bedford, a mile and three-quarters was repaired.

Mara Township Road (conditional).—Across lots 19 and 21, concessions 6 and 7, and between lots 20 and 21 in the same concession a mile and a quarter which was opened through green timber last fall was ditched, grubbed and stumped, making, the inspector says, a good road over the length mentioned.

Morrison and Rama Townline.—About three-quarters of a mile of gravelling from lots 5 to 7 in M. concession.

Monck Road west of Sebright.—On the townline between Rama and Mara west of Sebright about a mile of general work was done.

McKenzie Lake Road.—On the Hastings Road in the township of Sabine, two miles were generally repaired.

McPherson North Boundary.—The grading and draining of one mile.

McPherson, concession 5 Road.—A mile of clearing and half a mile of grading between lots 8 and 10 through the 5th and 10th concessions.

North Shore, Loboro' Lake.—From Perth Road in Loboro', beginning a quarter of a mile north of Loboro' Lake Bridge, a mile and a quarter was improved eastward with broken stone and general grading.

Nipissing Junction Road.—Two miles and a quarter were cleared, graded and drained.

North Bay and Bonfield Road.—Between lot 6, concession 10, and lot 4, concession 7, Ferris, two and a half miles were well repaired, and from lot 6 to lot 13, in the 11th concession, a mile and a half was graded, drained, and a twelve foot bridge built over Lavasse Creek.

North Algona, 4th concession 1st Proving Line.—On this road two miles were generally improved, the work being on lot 5, concession 1, on the 4th concession, lot 4, and on lot 5 in the 8th concession, with work between lots 24 and 25 in the 16th concession.

On Victoria in Longford.—General repairs.

Olden and Kennebec Roads.—In the townships named, on Parham and Arden Road, three miles of repairs were made. This is an important road in that district for general traffic.

Opeongo Road between Plauntz and Foymount.—Three miles repaired in the township of Sebastopol.

Opinicon and Chaffey Locks.—In the township of Loboro' on the boundary of Storington towards Perth Road, about two miles were well improved, and the inspector says, with another equal grant, a first-class road would be completed.

Oso and Maberly Road.—Between lots 11 and 12, concession 10, South Sherbrooke, grading was done with gravelling about half a mile.

Proving Line, Alice, between lots 20 and 21.—Some two miles of repairs.

Perth Road in Bedford.—The gravelling and grading in Bedford from Bedford Mills to Bucke Lake Bridge, the work being from lot 1, concession 12, to lot 10 between the 12th and 13th concessions, and representing some three miles of work.

Perrault Settlement Road.—Repairs were made, lot 8 to lot 10, concession 12, Gratton, amounting to about two miles, and again in the township of Gratton, on the Eganville and Perrault Settlement Road, repairs were made over lots 20 to 24 in the 15th concession.

Papineau Roads.—For the sum of $1,500, over ten sections, making general improvements for about four and a half miles.

Paquette Road.—On 2nd and 3rd concessions, Kirkpatrick, general repairs were made, including half a mile of stumping and grading.

Perth Road, Bedford Mills to Burgess.—In the township of North Crosby, from lot 2 to lot 9, in the 6th and 11th concessions, general repairs were made—something like two miles.

Parham Village to Parham Station Road.—A road known as Parham and Titchborne, in the township of Hinchinbrooke, on lot 24, concession 3, the improvements were mostly in a swamp. Altogether, the inspector intimates, about a mile and a quarter of work was performed.

Pembroke and Eganville Road.—In the township of Alice, two miles and a half were repaired, a portion being on the 2nd concession, and about a mile on the 6th concession. A mile was also improved from lot 9, concession 5 to lot 10, concession 6, with other improvements between lots 15 and 16 on the 3rd Proof Line.

Petawawa townline and road.—A new road was opened across concessions 7 and 8, North Algona and some two miles of repairs made across lots 19 to 24 in the township of Alice.

Pembroke and Beachburg Road.—In the township of Westmeath, between lots 19 and 22, Range B, about 3 miles were gravelled.

Pembroke and Mattawa Road.—Four miles and a half of general repairs in the townships of Alice, Stafford and North Algona.

Palmer Rapids and Quadville Road.—In the township of Raglan, between lots 29 and 32, in the 13th concession, grading and repairing was done and required on account of wash-out by the Madawaska River freshets.

Perrault Road.—About a mile of improvements and repairs were made in the township of Gratton.

Quadville and Jewellville Road.—In Raglan township across lots 27 and 28, in the 4th concession, half a mile of road was opened.

Ramsay 2nd concession Road.—Between concessions 2 and 3 on lot 3, a road was opened and graded, and with other work represents over two miles.

Road between Opeongo Line.—About half a mile of work cutting down a hill and building practically a new road on the 10th concession of the township of Adamston.

Road between concessions 6 and 7, Hagarty.—About a mile was opened through a swamp and generally corduroyed. General repairs were also made across lots 15 to 20 in the 6th and 7th concessions.

Road from Rockingham to Snake River.—A new road opened in the township of Raglan, lot 27, concession 4, to lot 24, concession 3, including cross-waying of a swamp through the 3rd concession—about a mile of work.

Rattar and Hugel Townline.—Stumping and grading on lot 4, concession 5, representing something like a mile of repairs.

Richmond township Road.—A work chiefly between lot 13 and 14, concession 8, Richmond, representing about half a mile.

Ross 1st and 4th concessions.—In South Algoma on Lake Doré Road across lots 26 and 28, concession 18, general improvements were made. Repairs were also made on the Cobden and Eganville Road.

Rankin Road.—On the 24th concession of Wilberforce, from lot 2 to lot 5, a mile was grubbed and waterways opened; about two and a quarter miles were also repaired.

Rolph Township Road.—General repairs of some two miles.

Rama, concessions L and M.—About three miles of gravelling was done on the concessions named.

Stafford Road.—Between lots 3 and 4, concessions 4 and 5, general grading was done. On the 3rd concession, lots 4 and 5 to 6 and 7, excellent repairs are reported; and on the 16th concession of the township of Alice, on lots 17 and 18, across concessions 15 and 16, about a mile was improved.

Side Line from Bromley Line to Concession A.—An estimated length of a mile was generally improved.

Side Line northward from Gore Line.—In the township of Westmeath, from lot 3 to lot 6 in the 22nd and 23rd concessions, a mile of gravelling and other repairs were effected.

Second Line, township of Stafford.—Grading and gravelling was done and good work reported on the 3rd concession of Stafford, between lots 4 and 5, something like half a mile.

South Algoma Road.—On this main road in North Renfrew, eight miles of general repairs were made.

Stanhope and Laxton Road.—Two miles were graded and improved from lots 7 to 14, concession Stanhope; on Peterson Road half a mile was generally repaired. General grading and improvements were also made between lots 20 and 28, and upon lot 8, through concessions 7 and 9, a mile was well graded, representing altogether about five and a half miles of general work.

Somerville and Bexley Roads.—In the townships referred to, for an expenditure of about $1,200, eleven miles were repaired, the municipality giving $200 in addition towards the work.

Sheffield and Hungerford Town Line.—A short road was opened across lots 19 to 22 for the convenience of settlers, the length being about a mile and a half.

Snow Road, Ompah to Lavant Road.—Half a mile constructed in the township of Palmerston and some two miles of repairs made on existing roads.

Springer and Caldwell Town Line.—In the township of Caldwell, a mile and a quarter was cleared from lot 4 to lot 2, concessions B and 1, and a quarter of a mile graded.

Sudbury Blezard Road.—An estimated length of four miles was well improved on this main highway.

Sturgeon and Tamagami Road.—In the township of Gilleon, a mile and a half was graded and improved between lots 2 and 8, concession 2. A mile and a half of grading and clearing was done in the township of Crerar from lot 1 to lot 4 in the 7th concession. In Springer and Field townships there were two miles of gravelling. In the township of Badgerow, across lots 6 and 8, concession 6, a mile was gravelled and drained, and from lots 2 to 5, concession 5, a mile and three-quarters was repaired and graded. In Gibbons township, three-quarters of a mile was cleared and graded between lots 4 and 5, concessions 1 and 2, and in the township of Crerar, lot 1, concession 2 to lot 4, a mile and a half was well opened, representing some ten miles of practically new work.

Smoky Falls, Grant and Bidal Road.—In Springer township, three-quarters of a mile of new road was opened from concession 5 to concession 3, Field, with gravelling for about a mile. Another mile in the township of Field on lots 3 and 4, concessions 5 and 6 was improved with a quarter of a mile opened, and another mile and a half was graded and largely gravelled from lot 1, concession 1, Field, ending at lot 10, concession 2, in the township of Grant.

Scollard North Town Line.—General repairs for an expenditure of $200 —about a mile of work.

Seventh Concession, Hagarty, between lots 7 and 12.— About a mile of repairs.

Sherwood, 6th concession from the boundary of Hagar.—Repairs over something like a mile.

Shamrock and Calabogie Road.—In the township of Bagot across lots 19 to 22 in the 12th concession, general improvements were made amounting to about a mile.

South Mountain Road, Brougham.—About a mile and a quarter of general improvements were made across lot 5, concessions 8 and 9 in Brougham township.

Second Proving Line, Hagarty.—About a mile and a quarter of grading and draining, very satisfactory, on lots 10 and 11 in the 3rd and 4th concessions.

Sherwood, between lots 10 and 11.—General repairs.

Sixteenth concession between Hagarty and Brudenell.—About two miles were well improved.

Springtown and Burnstown.—A work in the township of Bagot in the 1st and 3rd concessions across lot 17, consisting of general repairs.

Sullivan Road to Shamrock.—A work in the township of Admaston across lots 9 to 12, in the 11th concession, consisting of general improvements for two miles.

Sydenham and Loboro' Lake Road.—In the township of Loboro' from lot 4 to lot 8 in the 1st concession, a mile and a half was graded and gravelled.

Sunbury and Washburn Road.—In the township of Storrington, general repairs were made, chiefly in gravelling, grading, and cutting down hills for the general improvement of the road.

Sunbury and Battersea Road.—Two miles were well improved from lots 5 to 11, concessions 8 and 9 in the township of Storrington.

Town Line between South Algona and Grattan.—From the 22nd concession to Eganville on the above townline general repairs were made over about two miles.

Third Concesssion Road, Hagarty.—About a mile and a half of general repairs across lots 16 to 19, on the said concession.

Tamworth, Wagerville Road.—In Sheffield township between lot 11, concession 15, and the same lot in concession 13, about two miles of grading and ditching was accomplished.

Tyendenaga, 9th and 10th Concession Road.—From lot 37 to lot 39, concession 9 to Richmond Boundary three-quarters of exceptionally good work was done.

Town Line of Ross and Horton.—General repairs over something like a mile.

Victoria Road between Victoria Station and Uphill.—On the east boundary of Carden between lots 11 and 14 through a swamp a good deal of work was done, and on the same boundary across lots 6 to 10, about a mile of substantial improvements were made.

Whelan Road from Ashdod.—About three miles of work is represented in this case, two miles being across lots 7 to 11, concessions 7 and 8, Admaston, and other general grading was done from lot 4 to lot 5 in the 8th concession.

Wilno and Rockingham Road.—In Hagarty township, lot 34 to lot 2, in concessions 1 and 2, hills were cut down and gravelled, and on lots 33 and 34, Range A. to the 1st concession, same two miles were improved, opening a good road from Wilno Station to the G. T. Railway on the Opeongo Road leading to Rockingham.

Widdifield Township Roads.—Repairs were made over nine different sections in the township of Widdifield aggregating about six miles, in addition to which a new road was opened in Chisholm through lot 14, concessions A and B for about half a mile.

Warren and Hugel Road.—Two miles of general repairs with drainage.

Waren and Markstay Road.—In the township of Ratter, two miles were graded of a new road opened from lot 5 to lot 9 in the 3rd concession. Another mile was repaired on lot 2 from Warren to the 3rd concession.

Westport, Clarendon and Mississippi Road.—From lot 11 to lot 19 in concessions 4 and 6, repairs were made for four or five miles.

Wollaston Township Roads.—Two miles and a half were improved through concessions 6 and 8, lots 12 and 13, and across lots 22 to 28, concessions 5 to 8, further repairs were made,—some four miles altogether.

Wolfe Grove Road.—In North Lanark, in the township of Ramsay, through lots 17 and 16, concession 5, and lots 20 and 21, concession 6, new work was done throughout representing about a mile.

Wylie Road.—Over lots 16 and 17, concession 5, more than a mile was repaired, with about a mile of work on Wylie and Buchanan Road, lot 9 in the 2nd concession, all in the township of Wylie.

Wilberforce, 6, 8, 14 and 18 concessions.—In the above township and concessions mentioned about five miles of general improvements were made, with one half mile of new work.

Westmeath Road.—On Bromley Line to concession A. across lots 6 to 10, and from A. to concession 2, a mile was gravelled and graded.

Temiskaming District.

Armstrong Roads.—In the above township between lots 4 and 5, concessions 1 and 2, about two miles were opened; and between lots 10 and 11 across concession 4, a mile and a half. Between concessions 2 and 3, lots 5 and 6, another half mile was opened and between concessions 1 and 2, and lots 1 to 10, two miles were opened, ditched and drained for half the general roadway; in this case the inspector reports 72 days of gratuitous labour given by the settlers. Two miles of ditching and grading was also done on the Armstrong and Hilliard Road in the township of Hilliard from lots 2 to 7 in the 5th concession and includes about two hundred feet of pile bridging.

Boston Road.—Six miles and a half were generally improved between White River and Larder Lake City and five miles and a half cut out, grubbed and improved from about five and a half miles from Dane to within two miles and a half of White River.

Beauchamp and Henwood Townline.—About a mile of stumping, ditching and grading between lots 1 and 4 on the townline mentioned, and includes a bridge one hundred and thirty feet long and two smaller ones.

Beauchamp Road.—Between lots 4 and 5 across concession 5, then west through concessions 5 and 6 to lot 3 in Bryce, five miles were improved.

Beauchamp and Dack, between Lots 10 and 11, Concession 6, 1 and 2.—On the line between lots 10 and 11, concession 6, Beauchamp, and 1 and 2, Dack, a bridge across Sunday Creek was built and was a king post structure. Fourteen culverts and a large quantity of side hill cutting was done making a good road for, the inspector says, winter traffic. Also between concessions 4 and 5, north one mile, then west to lot 12 on the 5th concession, about a mile was ditched and generally crosswayed, with many other necessary improvements.

Bucke, between Lots 6 and 7, Concessions 6 and 1, Dymond.—Two miles of general grading across concessions 1 and 6, Dymond, and between lots 6 and 7, some two miles altogether.

Bucke and Firstbrooke Road.—In the township of Bucke, half a mile was graded and well improved. Another mile was repaired with stone and some necessary ballasting.

Brethour Road between lots 6 and 7.—The clearing and stumping through concession 5 and 6 across lots 6 and 7, and largely filling in washouts caused by some changes in the direction of a creek which interfered with the road location. The work represents about three miles of repairs.

Bucke 2nd Concession.—Between lots 9 and 10 about three-quarters of a mile was opened and gravelled.

Chamberlain Township Road.—In the 2nd concession, lots 8 to 12, one hundred rods were graded, with sixteen culverts and a bridge costing about $600.

Chamberlain Road, north from Englehart.—The ditching and grading of half a mile in Evanturel, and across concession 1 and part of concession 2 in Chamberlain, work was done: three culverts were put in in the township of Evanturel and sixty rods of cross-waying laid in the 4th and 5th concessions with grading on the 3rd and 4th concessions.

Chamberlain and Savard Line.—Some six miles were repaired in Chamberlain and Savard; a large portion was graded and well opened through Mud Lake.

Charlton and Englehart Road.—In the township of Dack, lots 10 to 7, concession 5, excellent repairs were made and some seven miles altogether were opened and improved.

Casey and Harris Town Line from White River west.—On the road named from lot 9, chopping and repairs were done throughout the length including eighty rods of ditching.

Dack, between Lots 2 and 3, Brethour south.—Between lots 2 and 3, concession 2, ending betwen the same lots in the first concession, the whole length was graded, with a large amount of cutting and the introduction of seven long culverts and reported as done in a good and workmanlike manner.

Evanturel, between 3rd and 4th Concessions Road.—About two and a half miles were repaired including half a mile of crosswaying and half a mile of new road opened in concessions 8 and 9.

Evanturel, between Concessions 8 and 9 and Concessions 4 and 5 Road.—Several hills were cut down and reduced and graded upon approaches to bridges in the township with the necessary general grading.

Fitzpatrick Bay Road.—Three and a half miles were repaired from Larder to Fitzpatrick.

Hudson and Kerns Town Line.—About a quarter of a mile of cutting was done upon a heavy hill. Owing to fire which destroyed about a thousand yards of timber upon the road, less work was done than had been anticipated.

Hilliard and Harley Town Line.—From lot 1 to lot 8, going east to White River some two and a half miles were stumped, graded and ditched through a muskeg. Repairs were also made between lots 4 and 5 in the 2nd conces-

sion, and in Hilliard across lots 5 and 6 in the 2nd concession half a mile was opened.

Henwood and Cain Road.—In these townships, from lot 8, Henwood, in the 5th concession to lot 7 in the 5th concession of Cain, one hundred rods of crossweying was covered and extensive improvements were generally made in grading, ditching and the building of culverts and bridges, covering a length of about 5 miles.

Henwood and Kerns Townline.—Three miles were opened and three miles improved, namely, from front of lot 3 to north townline three miles of improvements were made and on lot 3, concession 6, three miles were opened and sufficiently improved to give settlers a road to the Temiskaming and Northern Ontario Railway.

Harley and Casey, between Concessions 3 and 4.—From lot 9 Harley, ending at lot 3, Casey, on the said concession line, about a mile and a half of gravelling, grading and ditching was done, and with other improvements represents about three miles of work.

Hilliard Township Roads.—About three-quarters of a mile was opened the half width, and with stumping, grubbing and ditching, including a considerable quantity of bridging represents about three miles of improvements.

Hilliard and Armstrong Town Line.—Work done on a contract. Three miles completed between Hilliard and Armstrong, south from the north boundary, and again from the same townline from Thornloe North, three miles, six miles altogether.

Harley and Casey Townships, between Concessions 4 and 5, North Road east.—Four miles were well opened in the above townships for half the width of the general road, and has been made serviceable for public use.

Hudson Bridge, Lot 6, Concession 6.—A trestle bridge erected with two abutments and ten rows of piles driven ten feet making seven spans of sixteen feet, and all covered with two and a half inch planking.

Ingram, Concession 4, Road.—Between lots 1 and 4, in the 4th concession, something like a mile was opened half width and the length graded, with good drainage.

Ingram South Boundary.—Balance of account of last year upon the contract on the towline between Hilliard from Blanche River to the township of Brethour for three and three-quarter miles at $390 per mile.

Keys Road, Harris and Casey.—Between lots 6 and 7, concession 6, Harris, to lot 9, concession 2, Casey, three hundred and thirty-five rods of crossweying were laid, and a mile of ditching upon each side with the covering of the crossway, and outlet drainage.

Marter Township Road.—A mile of work was done by grading and ditching and covering of a bridge, one hundred and ten feet long. Culverts were extended and many others constructed represeting about three miles of work.

Montreal River Roads through Bryce.—Over twenty miles were opened as a winter road.

Otter Creek Road.—In the townships of Brethour and Hilliard from between lots 2 and 3, Brethour, north a quarter of a mile, thence west one mile to Hilliard, and again on the townline half a mile making and opening a mile and three-quarters forty feet wide and stumping and grading same.

Pacaud and Chamberlain Town Line.—A quarter of a mile on a hill on the townline named with other work represents a mile of new road opened.

Repairing Old Roads.—Some thirty-three miles were repaired on Haileybury and West Road, townline of Evanturel and Earlton and elsewhere.

South Boundary of Marter.—Between the townships of Marter and Evanturel from lot 10 to lot 6 of the latter township into the township of Englehart, a mile and a half of effectual repairs were made.

Savard and Robillard Town Line.—A work between the townships named along lots 5 to 10, the entire length, about three miles was graded and ditched.

Sasaganika Lake Road.—A mile and a half of improvements were made in the townships of Coleman and Bucke in the town of Cobalt.

Silver Centre Road.—Two miles were opened and well improved.

Tomstown Road North.—General crossweying, ditching and improvements were made in the townships of Marter and Evanturel with three and a half miles of repairs from Larder Lake to Fitzpatrick Bay, altogether about six miles.

Wright's Creek Road.—In the township of Casey, lot 6, concession 5 to lot 9, concession 4, three-quarters of a mile were stumped, graded and ditched. Thirteen culverts were constructed and four bridges covered with plank, representing about three miles and a half.

General.

Upon Drainage Roads in the Rainy River District.—Over $9,000 was spent in opening about 12 miles and a half of drains, the average price being about $2.00 per rod.

Upon New Short Roads, Bridges and Repairs.—$4,702.38 was spent upon 14 or 15 various roads in various districts in the Province and reported generally in the general divisions and shown fully in the public accounts.

New Trunk Roads.—The greater portion of this expenditure was the opening of a road between Elk Lake to Gowganda under a contract for 30 miles at $75 per mile. Two miles of grading and general construction was done on the Sudbury, Blezard Valley and Hutton Valley Road, and three or four other miles elsewhere.

Sudbury-Soo Trunk Road.—About 61½ miles were opened on this road under contracts of record in the Department and shown on the plan in connection with the work.

Supplementary Estimates.

Eagle River Road in Aubrey Township.—A road a mile and a quarter in length was opened and well constructed and the work is largely on lot 19, con. 6, Aubrey.

Northern Road in North Algoma.—In the township of Aberdeen, lots 1 and 2, concessions 1 and 3, grading and gravelling and other work was done, making two miles of excellent road.

Road on section line between sections 3 and 4, Korah, and 9 and 10, Awenge.—Some three miles were generally improved and ditched for a considerable distance through a rough and stony section.

Road between section 25 and 26, Korah.—One hundred and sixty-five rods were opened and ditched upon each side. Two hundred and sixty rods were also opened forty feet wide and grubbed to a width of 28 feet.

North Prince Roads.—Half a mile was opened through virgin forest twenty feet wide on the blind line of section 28.

Road between Fenwick and VanKoughnet.—A mile and a quarter was graded and generally improved.

Dunn's Valley Road, Township of Fenwick.—About half a mile was opened and make generally passable.

North Sherbrooke Road.—On lot 13, concessions 2 and 3, the renewal of a worn out bridge was the chief work involving one hundred and eighty feet of filling to an average depth of eight feet.

Wainwright Road.—In the above township through concessions 1 to 6, three miles were repaired. The road from Dryden to the railway, on account of heavy traffic had become impassable and the repairs made were a necessity. The road is now reported to be in fairly good condition.

Anderson Road.—From the main road in Kenora between lots 3 and 4, concession 7, Jaffray, a mile and a half of excellent improvements have been made according to the inspector's report.

The total expenditure is furnished in detail by the Accountant.

I am, Sir,

Your obedient servant,

HENRY SMITH,
Superintendent, Colonization Roads.

SUMMARY OF EXPENDITURE ON COLONIZATION ROADS AND BRIDGES IN THE YEAR 1908.

North Division.

Name of Work.	Expenditure.
Aberdeen Road (from Galbraith to Northern Road)	$500 97
Aberdeen Road (Concession 6, Road and Bridge)	299 33
Anderson Road	491 59
Allan and Gordon Township Road (Coburn Section)	301 25
Allan and Gordon Township Road (Wilson Section)	200 24
Assiginack Municipality By-law	700 00
Atikokan Road	483 51
Alberton Municipality By-law	2,000 00
Aweres Road	800 76
Balfour Township Road	498 02
Bright, Concession 4 to Dean Lake	400 00
Bright Additional Road	499 65
Bruce Mines and Nesterville Road	395 58
Bruce Mines Road in Plummer	496 94
Bright between Lots 10 and 11	498 04
Blind River Roads (Fallu Section)	800 32
Blind River Roads (Duchene Section)	207 00
Bass Lake Road in Kirkwood, Con. 3	520 10
Bridge Concession 4 in Galbraith	320 92
Blake North, Town Line Lots 8 and 9	399 23
Blake Township Road from Fort William	2,400 00
Billings Township Road	350 21
Bidwell to Manitowaning Road	300 74
Billings Municipality By-law	700 00
Barrie Island Roads	201 30
Ball and Shenston Road (opposite Section 29)	490 00
Burriss and Carpenter Town's Line	1,002 25
Burriss 5 and 6 Concession	299 82
Blue, Pratt and McCrosson (Forks Section	982 55
Batchawana Road	500 00
Blue, Pratt & McCrosson (Nolan Section	3,000 00
Blue and Curran Town Line between 17 and 18 of Blue	996 80
Bellevue Road	499 57
Centre Line Road, Plummer Additional	518 58
Campbell Creek Bridge	297 36
Carnarvon Municipality By-law	700 00
Cockburn Island (conditional) Road	150 00
Carnarvon Township (Elliott Section)	250 00
Carnarvon Township (Hopkin Section)	198 68
Carnarvon Township (McDonald Section)	151 00
Campbell Township Roads (Sloss Sec.)	597 74
Campbell Township (Dougherty Sec.)	50 25
Campbell Township (Langtry Sec.)	75 48
Campbell Township (Vanmeer Sec.)	75 00
Creighton Township Road	999 23
Carpenter, Lots 6 and 7	1,299 40
Conmee Township Roads	799 71
Chapple Municipality By-law	1,000 00
Dean Lake Road	298 72
Day Mills Road	503 26
Dowling Township Road	502 77
Desbarats and Bruce Mines Road and Bridge	400 00
Day and Thessalon Road	300 00
Dawson and Robinson Townships (Irwin Sec.)	299 96
Dawson and Robinson Townships (Colgan Sec,)	173 97
Dawson and Robinson Townships (Cook Sec.)	124 99
Drury, Denison and Graham By-law	536 00
Dobie, 4 and 5 Concession	725 10
Dilke Municipality By-law	579 84
Dorion Township Road	824 50
Dawson Road and Bridges	913 51
Dilke and Ellis, Sections 34 and 35	984 09
Dunns Side Road, Township of Fenwick	200 00
Eagle River Road in Aubrey	528 90

Name of Work.	Expenditure.
Espanola Roads (Fisher Sec.)	$348 61
Espanola Roads (Mulvany Section)	150 15
Emo Municipality By-law	1,000 00
Emo and Devlin Road	1,334 19
Fourth Concession of Howland	301 00
Fort Frances, McIrvine and Miscampbell (Ellis Section)	476 67
Fort Frances, McIrvine and Miscampbell (between Sections 29 and 32 and 30 and 31)	317 50
Galbraith 4 and 5	296 15
Gough Township	300 00
Gladstone, Concession 5	499 71
Galbraith, 3 Concession	305 25
Gould and Parkinson Road	500 00
Gray's Road to Lake Onaping	800 90
Grading Massey Bridge Road	149 66
Grinesthorpe Road	304 75
Gordon and Allan Municipality By-law	700 00
Gorham and McIntyre Road	500 80
Gillies, Lybster, Strange and Marks of 1904	1,464 34
Gillies, Concession 1 and 2	200 00
Gillies and Scoble Town Line	200 00
Goulais Bay Road	1,998 76
Goulais Bay Government Road in Fenwick	149 75
Hallam Township between Lots 9 and 10	506 24
Hallam Township (Caldwell Section)	499 95
Hallam Township (Stinson Section)	492 26
Hilton Township, 15 Side, G to 1	302 63
Hallam, Concession 1	275 49
Houghton, Wells and Gould Roads	502 99
Hilton Municipality By-law	1,000 00
Howland Municipality (Ferguson Section)	400 56
Howland Municipality (Stephens Section)	152 82
Howland Municipality (Cathcart Section)	150 00
Howland Municipality By-law	700 00
Haviland and Fenwick Road	299 62
Iron Bridge and Parkinson Road	500 04
Isbester and Bar River Road	300 00
Jocelyn Township Road	750 48
Johnston and Tarbut Boundary Line (McLeod Section)	251 58
Johnston and Tarbut Boundary Line (King's Section)	245 29
Jaffrey Roads	391 73
Kehoe Township Road	287 50
Keating Location to Bruce Mines	501 24
Kagawong to Gore Bay Road	400 88
Killarney and Rutherford Bridges	300 00
Kingsford, 10 and 11	872 00
Kingsford, 6 and 7	510 25
Kingsford, 2 and 3 Con	606 13
Korah Township Roads	600 00
Lumsden Township Road	594 80
Lefroy Section, 16 and 22	300 65
Lacloche Creek Bridge	250 00
Laird Township (Murray Section)	301 78
Laird Township (Grainger Section)	300 77
Laird Township (Hollingsworth Section)	300 00
Lee Valley Road in Hallam	500 05
Leeburn and Fraser Settlement	507 02
La Vallee and Burriss Road	991 04
La Vallee and Fort Frances Road	1,497 66
Little Forks and Vallee Road	1,980 77
La Vallee Municipality By-law	1,000 00
Lybster Township Bridge	497 89
Massey Mine Roads (Strain Section)	247 92
Massey Mine Roads (Brown Section)	250 59
Massey Bridge Road	699 28
May and Salter Town Line Road	499 23
May Township, 5 and 6	401 74
Marsh River and Dean Lake in Patten Tp	516 98
Manitowaning and Little Current (Lewis Section)	703 63
Manitowaning and Little Current (Burnett Section)	199 57

Name of Work.	Expenditure.
Meldrum Bay and Gore Bay Road	$1,010 29
Mills Township and Burpee Road (Beckerton Section)	149 75
Mills Township and Burpee Road (Bailey Section)	100 00
Mills Township and Burpee Road (Campbell Section)	150 35
Mills Township and Burpee Road (Robinson Section)	398 59
Miscampbell Roads	788 95
Morley Municipality By-law	600 00
Mather and Dobie Town Line	809 99
Mather between 5th and 6th Concession	400 50
Marks Township Road from Lybster	300 00
Mine Centre Road and Bridge	999 61
Morley between 23 and 24	398 52
Michipicoten Mining Roads (Reed Section)	1,525 84
Michipicoten Mining Roads (Ross Section)	499 48
McKinnon Township Road	300 00
McPhee Valley Road	301 08
Northern Road from Thessalon	962 96
Northern Road	902 06
Neebing Road from Gore Street	861 51
Nairn Township Roads	700 00
Nepigon River Road	361 33
Nellis between Lots 4 and 5	400 50
Nellis and Patullo Town Line and Bridge	1,000 49
North Prince (Wilson Section)	124 25
North Prince (Armand Section)	199 65
Otter Tail and Gordon Lake Road	501 40
Oliver Township By-law	350 00
O'Connor Township By-law	675 00
Plummer, 3 and 4 Roads (Kay Section)	266 46
Plummer, 3 and 4 Roads (Lawrence Section)	300 00
Plummer, 3 and 4 Roads (Burden Section)	251 00
Plummer, Additional By-laws	1,550 00
Patton, Lots 9 and 10, Concession 4 (Rutledge Section)	300 31
Patton, Lots 9 and 10, Concession 4 (Hammell Section)	300 68
Potomac River Road and Bridge	498 62
Parkinson and Montgomery Road	400 46
Paipoonge, Lots 15 and 16	401 25
Poplar and Gore Bay Road	500 50
Providence Bay and Kagawong	600 02
Providence Bay and Michael's Bay Road	299 00
Patullo, Sections 5 and 8	391 21
Patullo, Sections 3 and 4	998 80
Pearson Township Roads	400 00
Prince Township Roads	700 76
Park Township, Sections 3 and 4	300 37
Pennefather and Korah Town Line	497 43
Rock Lake Road in Plummer	500 24
Rose, between Sections 18 and 19	500 70
Rayside Township By-law	1,100 00
Rose and Kirkwood Road	499 97
Richardson and Tait Road	999 91
Rosebury and Shenston Town Line	388 66
Road on Section Line 3 and 4 and 9 and 10 of Awenge	750 42
Road between Sections 25 and 26, Korah	500 00
Road through Sections 33 and 34 in Prince	400 04
Road Sections 26 and 27, Korah	749 67
Road Sections 1 and 12	502 74
Road to Goulais Bay Road (extension of Bellevue Road)	476 17
Road between Sections 16 and 17, Tarentorus	500 34
Roads Section 19 and 30, Tarentorus	500 00
Road through Fenwick and VanKoughnet	499 75
Repairs to Magpie Bridge, Michipicoten	40 00
Salter, Sections 28 and 29	300 00
Spanish Township Road to Armo Settlement	500 46
Sowerby and Kirkwood Road	504 51
Salter, Sections 33 and 34	500 00
Salter, Sections 20 and 21	294 52
Sugar Lake Road in Walford	500 00
St. Joseph Township By-law	500 00
Scoble, 10 and 11	495 00

Name of Work.	Expenditure.
Sandford Township Road Deviation	$352 11
Sandfield Mills to McCullough Road	306 65
South Bay to Five Corners Road	399 95
Sandfield Township (Young Section)	449 19
Sandfield Township (McCutcheon Section)	150 68
Sandfield Municipality	150 25
Silver Mountain Road and Bridges	1,196 53
Sand Bay Road	355 69
Strange Township from York Siding	200 00
Shenston North Town Line	1,086 68
Sudbury Soo Trunk Road (Sec. No. 1, chopping and clearing Mile Post 5-10	1,250 00
" " " 2, " " " 10-20	2,481 00
" " " 3, " " " 20-26	508 98
" " " 4, " " " 26-33	1,438 01
" " " 5, " " " 33-44	1,680 00
" " " 6, " " " 44-50	1,476 00
" " " 7, " " " 50-60	1,656 00
" " " 8, " " " 70-78	1,901 62
" " " 9, " " Serpent River to Spragge Station	1,029 00
Sudbury-Soo Trunk Road (Sec. No. 10, chopping and clearing Spragge to Algoma Mills	1,815 84
Sudbury-Soo Trunk Road (Sec. No. 11, chopping and clearing Algoma Mills to Blind River	1,936 80
Sudbury-Soo Trunk Road (Section No. 1, grading road)	1,228 00
" " " 2, "	2,631 84
" " grading from Blind River south	8,282 84
Sudbury Soo Trunk Road, Grading Section 4	80 00
Sudbury Soo Trunk Road, Grading Section 5	852 90
Sudbury Soo Trunk Road, Concrete Work	625 91
Sudbury Soo Trunk Road, Survey	9,000 00
Sudbury Soo Trunk Road, Advertising, Contracts, etc	187 65
Thessalon Tp. By-law	200 00
Tarbut and Johnston Tp. Roads (McKinnon Section)	352 93
Tarbut and Johnston Tp. Roads (Rouswell Section)	297 11
Tarbut and Johnston Tp. Roads (Robinson Section)	302 04
Thessalon Road, Lefroy Township (East End)	515 10
Thessalon Road, Lefroy Township (West End)	499 96
Tehkummah Municipality By-law	250 00
Tehkummah Roads	380 00
Tait and Mather Town Line	895 04
Tait and Patullo Town Line	499 20
Boat Service, Blue, Pratt and McCrosson Road	56 05
Tarentorus By-Law (Roads)	685 98
Vermillion River Road, Fairbank	301 00
Wells Township Roads, 3rd Concession (Pringle Section)	414 35
Wells Township Roads (N. Ansley Section)	517 28
Wells Township Roads (C. Ansley Section)	500 00
Wainwright Road	501 98
West Bay Roads	418 37
Worthington Road Bridges	735 00
Walker's Road in Haviland	198 96
Woodiatt South Boundary Road	90 00
Zeland Township, Concession 5	500 04
Draining Rainy River Roads, Draining across Section 15 of Crozier and McKelvie Creek	350 00
Draining Rainy River Roads, Fort Frances, McIrvine and Miscampbell Drain	2,598 77
Draining Rainy River Roads, Lavalle Creek and Drain	85 60
Draining Rainy River Roads, Draining Secs. 26 and 27 Tp. of Lash, and Armstrong Creek	2,105 95
Draining Rainy River Roads, Drain, 6 and 7, Carpenter and Dungey's Creek	671 49
Draining Rainy River Roads, Bartley's Creek and Drain	131 25
Draining Rainy River Roads, Tait and Mather Town Line Drain	647 40
Draining Rainy River Roads, Drain, Lots 10 and 11, Concession 3 of Burriss	392 20
Draining Rainy River Roads, Drain, Lots 8 and 9, Concession 5 of Burriss	990 00
Draining Rainy River Roads, Drain, Town Line of Mather and Dobie	151 80
Draining Rainy River Roads, Drainage Survey	956 71
Inspection North Division	4,292 00
Inspection Balances, 1906	480 00
Road Machinery, Eton Township, Grading Machine	275 00

Name of Work.	Expenditure.
Road Machinery, Algoma District, Graders and Machinery	$727 92
Road Machinery, St. Joseph Township, Grading Machin	250 00
Road Machinery, Sudbury Soo Road, Graders, Scrapers, Rooter Plows, etc.	855 31
	$182,945 44

West Division.

Armour, 10 Side Road	249 93
Armour and Ryerson Boundary Line	200 04
Brunel and McLean (Brunel Road from Lewis' Corners	350 61
Brunel and McLean (Lake Shore Road)	101 75
Baxter-Gibson (Lot 13, Con. 2, Baxter)	299 99
Baxter-Gibson (Gibson Road)	249 29
Baxter-Gibson (Lamereau Section)	150 00
Beveridge Hill and Road	200 03
Burk's Falls Road to Sand Lake	500 00
Bethune, 8 Con. Road	299 84
Blackstone Road in Conger Township	299 00
Byng Inlet Village to Station Road	965 10
Balkwell Road	404 00
Booth Line Road	599 94
Cardwell-Chaffey Roads (North Cardwell Road from Lot 20)	200 75
Cardwell-Chaffey Roads (Huntsville and Hoodstown)	358 40
Cardwell-Chaffey Roads (Wilson's Hill, Lot 26, Concession 8	101 25
Cardwell-Chaffey Roads (Lot 13, Concession 7, North to Shannon's	101 50
Chapman, Con. 11	300 46
Commanda Lake Road	248 68
Chapman, Con. 11 to Boundary Line of Lunt	300 03
Chapman Road and Bridge	483 09
Christian Valley Road, Nipissing Township	400 66
Chisholm and Himsworth Town Line	300 00
Centre Road, McKellar	404 12
Chapman Township By-law	200 00
Draper-Ryde Roads (Draper Township, from Morrow's Cor.)	400 50
Draper-Ryde Roads (Ryde Centre, from Lot 5, Con. 7)	194 50
Draper-Ryde Roads (Ryde, Lot 25, Concession 8)	200 55
Dillings and Port Carling Road	200 20
Distress Road in Strong	200 00
Franklin and Sinclair (Portage Road to Canal)	149 83
Franklin and Sinclair (Oxtongue Road)	149 00
Franklin and Sinclair (Wood Road)	100 00
Franklin and Sinclair (Sinclair and Franklin Town Line, Lots 4 and 5)	154 32
Franklin and Sinclair (Gillside and Grassmere from Lot 30, Con. 14, Franklin	180 60
Franklin and Sinclair (Line between Lots 10 and 11, Concession 15 in Franklin	209 40
Ferguson and Burpee Road	502 00
Ferris and Himsworth Town Line	248 00
Goose Neck and Whitestone Valley Road	404 53
Great Northern Road, Hagerman and Croft	714 45
Great North Road in Ferguson	301 66
Gully Bridge, near Broadbent, McKellar	298 73
Himsworth, Con. 6 and 20 Side Road	297 49
Himsworth, 10th Side Road	300 05
Himsworth, 25th Side Road	200 29
Himsworth, 6th and 7th Concessions	300 05
Himsworth, 17th Concession	300 87
Himsworth, 4th Concession, Lot 3	250 14
Himsworth, 5th Side Road	200 07
Himsworth Road	250 42
Himsworth Road into Laurier, Lots 5 and 6	200 00
Healy and Orange Valley Road and Bridge	500 15
Hagerman to Lot 35, Con. 8	202 30
Humphrey Township, Maple Lake and Rosseau Road	399 77
Joly and Strong, 8th and 9th Concessions	200 80
Morrison and Wood (Morrison Tp., between Cons. 3 and 4, to Con 10)	397 35
Morrison and Wood (Wood Tp., Long Point Road, from 3rd to 6th Con	150 03
Morrison and Wood (Gov. Road, from Clear Lake to Boundary of Wood)	250 00
Medora and Port Carling (Peninsula Road from Bruce Lake north)	165 50
Medora and Port Carling (West Joseph's Road, from Foster Bay north to Boundary	149 96
Medora and Port Carling (Glen Orchard to Bala)	150 00

Name of Work.	Expenditure.
Medora and Port Carling (Foreman Road, from Lake Joseph southerly)	$150 50
Medora and Port Carling (Mortimer Point Road)	150 00
Monk and Watt (Port Carling Road in Monk, from Golt's Corners)	200 00
Monk and Watt (Port Carling Road in Monk, from Falconbridge)	199 53
Monk and Watt (Port Carling Road in Watt)	397 43
Macaulay Road	356 47
Muskoka Township By-law	500 00
Mills, between 25th and 26th	200 00
Middle River Bridge in Balsam	500 14
Monteith and Perry Road, from Nipissing Road	300 00
Machar, 30th Side Road to Eagle Lake	298 00
MacDougall and Carling Town Line	195 00
McMurrich, 25th Side Road (White Section)	198 02
McMurrich, 25th Side Road (Rhaney Section)	197 92
McMurrich and Ryerson Town Line	200 08
McMurrich, 6th Con	199 95
McMurrich, 10th Con	252 53
McKellar Village Road	248 94
McKellar, Con. 2, and Christie (Wright's Section	399 62
McKellar, Con. 2, and Christie (Fisher Section)	199 94
Muskoka Road, north of Ardtrea	608 52
Matchedash Roads and Bridges	799 40
Monck Road, west of Atherly	498 79
McDonald and Leatherdale Road	399 00
Novar and Bethune Road	300 00
Nipissing Road, Monteith and Spence (North Seguin to Magnetawan)	303 68
Nipissing Road, Monteith and Spence (Seguin Falls to Rosseau)	449 60
Nipissing Township, Con. 2	299 61
Nipissing Township, Con. 10	200 45
Nipissing, 19th Side Road	200 21
Oakley, McLean and Ridout Roads (Crozier's Bridge to Wood Lake)	344 72
Oakley, McLean and Ridout (Dorset Road, in Ridout)	199 00
Oakley, McLean and Ridout (Minden Road, in Ridout)	99 94
Oakley, McLean and Ridout (Huntsville and Baysville, from Baysville north	205 29
Oakley, McLean and Ridout (Baysville and Bracebridge Road)	200 35
Orrville and Orange Valley Road	299 50
Parry Sound Road to 6th Con. McDougall	300 00
Proudfoot, 10th Side Road	152 25
Parry Sound Road, Rosseau to Skelton River	396 33
Proudfoot Road Deviation, Armour Township	500 00
Perry and Monteith Road, in McMurrich	200 05
Perry and Monteith Roads	1,000 04
Perry Township By-law	500 00
Port Severn Road	407 20
Ryerson, between Lots 5 and 6	300 00
South Seguin Bridge	240 00
South Himsworth Road (Kelly Settlement)	201 39
South Himsworth (10th Side Road)	349 69
South Himsworth Bridge over South River, Concessions 9 and 10	409 49
Scotia Junction Road in Perry	100 43
Savage Settlement and Kearney Road, Perry Township	199 75
Strong Township (5th Side Road)	200 00
Strong Township (13th Side Road)	200 00
Strong Township (20th Side Road)	400 57
Strong and Joly Town Line	499 27
Strong and Mather Town Line, 15th to 20th Side Road	301 00
South River Bridge in Joly	201 90
South River Road, Bob's Hill	253 03
Surprise Lake Road	250 03
Spence and Ryerson, 4th Concession	300 00
Stisted and Stephenson, Stisted Road north in Stephenson	349 48
Stisted and Stephenson, Road in lieu of McMurray Town Line	350 00
Stisted and Stephenson (Swamp Road leading to Cardwell)	102 00
Temperance Road	199 51
Westphalia Road, from Coulter's Hill to Half-Way House	428 00
Westphalia Road (Stenabough Section)	398 07
Whitestone Valley Road, Hagerman	500 00
Whitehall Siding Road, McMurrich	208 61
Wilson, McConkey, Mills and Hardy Road	1,096 74
Washago and Wardell's Road	293 58

Name of Work.	Expenditure.
Road leading to Rondeau Park	$500 00
Inspection, West Division	1,674 00
Doe Lake Road, balance from 1907	10 00
	$43,299 29

EAST DIVISION.

Arden and Harlow Road	$504 11
Addington Roads (Head Section)	400 18
Addington Roads (Chatson Section)	410 00
Airy Township Roads (Quackinbush Section)	250 30
Airy Township Roads (Haggert Seetion)	250 00
Almond Creek Road and Bridge	300 00
Appleby, Cocessions 2, 4 and 4	400 00
Anstruther Township Roads	300 00
Alice Roads (16 Concession Line)	300 17
Alice Roads (14 Concession Road)	400 73
Alice Roads (10 Concession Road)	699 31
Alice Roads (12 Concession Road)	199 85
Alice Roads (10 Concession Road, Thompson Section)	99 05
Alice Roads (1st Proving Line)	200 79
Alice Roads (Proving Line 20 and 21)	150 00
Alice Roads (7 and 8 Side Line)	102 99
Barrie Road in Barrie Township	299 61
Babcock and McLean Road in Olden	192 00
Battersea and Jones' Falls Road in Storrington	218 90
Base Line Road, 6th Concession, Wolfe Island	300 00
Bancroft and Hermon Road	399 75
Ressemer and Long Lake Road	505 57
Burgess Mine Road	398 38
Bancroft and Maynooth Road	296 39
Bancroft and Coe Hill Road	396 24
Bangor Township Roads (Boyle Section)	300 75
Bangor Township Roads (Oram Section)	300 00
Bellamy Road, Pakenham Township	514 36
Boulter Township (Depot Creek Bridge and Road)	303 00
Boulter Township (Boulter and Chisholm, 20 Side Line)	300 24
Boulter Township (Concession 12, from East Lot 25 to 30)	300 00
Bonfield Township Roads (25 Side Line, Concessions 4 and 6)	200 20
Bonfield Township Roads (Making Drain and Blasting Rock)	158 40
Bonfield Township Roads (Concession 7, from Lot 4 to 1)	198 36
Bonfield Township Roads (Grading Concession 8, Lots 8 and 10)	100 00
Bonfield Township Roads (25 Side Line, Concessions 1 and 2)	357 70
Bonfield Township Roads (15 Side Line, Concessions 11 and 12	300 40
Bonfield Township Roads (25 Side Line, Concession 9)	200 00
Bonfield Township Roads (25 Side Ltne, Concessions 8 to 6)	200 00
Bonfiele Township Roads (20 Side Line, Concessions 3 and 4)	200 75
Boulter and Bonfield Town Line	251 55
Blezard, 5and 6 Concegsion, Road and Drain	1,399 88
Badgerow, Lots 2 and 3	200 45
Broder, 3 Concession, Lots 9 to 12	200 00
Bessinet, Road Concession land 2 Kirkpatrick	199 80
Beaudry Bridge	217 78
Bastedo Concession 2, Lots 10 to 14	201 43
Belmont Township Roads (Sexsmith Section)	383 14
Belmont Township Roads (Merrian Section)	210 43
Burleighh and Apsley Roads	599 97
Buckhorn South Roads (Nichols Section)	100 05
Buckhorn South Roads (Spence Section)	50 00
Buckhorn South Roads (Flynn Section)	99 75
Buckhorn South Roads (Wendover Section)	50 00
Bromley, Concession 5 Road	304 40
Bromley, 4th Concession Road	400 00
Black Duck Creek, 12th Concession Road	102 40
Brudenell Telegraph Line (Rismer Section)	217 65
Brudenell Telegraph Line (Kelby's Bridge)	173 75
Brudenell Telegraph Line (Grugel Section)	251 50
Brudenell, from the 2nd Concession Road to 13th Concession Road	150 00
Brudenell and Rockingham Branch Road	360 00
Bagot and Admaston to Springtown	301 00

Name of Work.	Expenditure.
Black Donald Road, Griffith and Matawatchan	$201 28
Black River Road in Dalton	300 00
Big Eddy Deviation Road	197 60
Crow Lake Road, St. George's Lake	300 00
California Road in Camden and Sheffield	300 09
Cruse Road Cononta	200 00
Crow Lake Road in Bedford	200 00
Corundum Mine Road	613 85
Cashell Road	402 38
Cross Lake and Madawaska Road	500 12
Clyde Forks and Folger Road	250 00
Chaffey Locks and Opinicon Road	200 00
Chisholm Township Roads (5 Side Line through Concession 15)	200 23
Chisholm Township Roads (Repairing Jamb of North Shore Pier, Wasa Creek Bridge)	60 05
Chisholm Township Roads (Graham Creek Bridge, Concession 14)	150 69
Chisholm Township Roads (5 Side Road from 8 to 10 Concession)	302 06
Chisholm Township Roads (Side Line on 12th Concession)	148 71
Chisholm Township Roads (15 Side Line from 8 to 10 Concession)	302 06
Chisholm Township Roads (10 Side Line from 8 to 6 Concession)	203 30
Chisholm Township Roads (Repairing 20 Side Line through Concessions 11 and 12)	309 50
Calvin Township Roads (Repairing 30 Side Line)	199 45
Calvin Township Roads (Side Line North to Concession 4, west to Lot 33)	150 56
Calvin Township Roads (Repairing Road, Concession 4, Lot 30 to 20 Side Line)	175 25
Calvin Township Roads (Grading Concession E. east across Lot 6)	175 50
Calvin Township Roads (Town Line Calvin and Papineau, Concession 2)	100 00
Calvin Township Roads (Mattawa and Bonfield West from 5 Side Road)	123 85
Calvin Township Roads (Grading Road Concession 4 and 5 Side Line west)	175 00
Calvin Township Roads (Concession 2 across Lot 25)	100 15
Calvin Township Roads (Concession 2, from Lot 28 to 30 Side Line)	200 00
Calvin Township Roads (Repairing Breakwater on centre pier and Side jamb on east pier Amable Dufond Bridge, Concession 2)	100 00
Carden and Mara Town Line	200 00
Constance Creek Road	287 70
Cameron Township Roads (Repairing Road west of Almond Creek Bridge)	100 00
Cameron Township Roads (Concession 25 to Town Line)	300 08
Cameron Township Roads (Concession 24, from Lot 3 to Lot 7)	200 31
Cameron Townshtp Roads (Concession 24, Lot 22 West)	201 25
Calvin and Bonfield Town Line Road	299 89
Capreol, 3 and 4 Concession	1,201 03
Caldwell and Badgerow Town Line	101 85
Cassimer, Concessions 4 and 5	201 00
Cosby between 2nd and 3rd Concession	301 68
Cosby and Martland, Concessions 3 and 4	300 02
Capreol South Boundary	500 00
Cash Bay, Booth Road (Renaud Section)	1,500 00
Cash Bay, Booth Road (Larocque Section)	1,400 00
Caldwell Township By-law	666 00
Cassimer North Boundary, Lots 4 to 8	199 82
Chandos Township Road	600 58
Chandos Township By-law	711 33
Cavendish Township Roads (Wendover Section)	100 00
Cavendish Township Roads (Cochrane Section)	100 00
Cavendish Township Roads (Higgins Section)	202 75
Clontarf Road	300 00
Calabogie and Springtown Read	299 75
Carden Township Roads (Barron Road between Dalrymple and Kirkfield)	200 00
Carden Township Roads (No. 1 School House west to Mara Township)	100 00
Carden Township Roads (8th Concession Line)	201 00
Delora and Marmora Station Road	175 00
Darlidg and Lanark Town Line	199 65
Darling, 8th Concession	198 25
Delamere South Boundary (Beaulieu Section)	1,001 98
Delamere South Boundary (Courchesne Section)	1,000 63
Dunnett and Ayyleby Boundary	200 50
Dunnett between Lots 6 and 7	200 05
Dunnett 2nd and 6th Concession	463 00
Dummer Township Roads (Andrew Section)	200 00
Dummer Township Roads (Moore Section)	100 50

Name of Work.	Expenditure.
Douro Township By-law	$238 20
Douro Road to St. Joseph's Church	209 58
Douglas and Mount St. Patrick	302 05
D'Acre and Caldwell Road	300 56
Dysart Township By-law	1,000 00
Dalton Township Roads (Concession 6, Lot 29 North)	101 95
Dalton Township Roads (Monk Road from Uphill)	150 00
Dalton Township Roads (West Line, Lot 30, Concession 2, Hill's Bridge)	100 00
Dalton Township Roads (Monk Road, No. 3 School House, Dartmoor)	151 20
Dalton Township Roads (Township Road)	54 10
Eil Lake Road	203 56
Eganville and Killaloe Road (Silver Lake)	251 45
Eganville and Killaloe Road (Eganville Road west from Schroeder's Corners)	302 17
Eganville and Killaloe Road (Risto Section)	250 25
Eganville and Donegal Road	669 00
Enright Settlement Road	305 75
Fish Creek Road in Palmerston	150 00
Farraday and Herschell Boundary Road	201 10
Ferris Towdship Roads (15 Side Line through Concession 8)	200 30
Ferris Township Roads (Side Line through Concession 2)	298 40
Ferris Township Roads, Nosbonsing Station Road, Concession 5, Lot 3)	152 25
Ferris Township Roads (Concession 6, from Lot 12 west)	153 00
Ferris Township Roads (Concession 10, from Corbeil's Crossing east)	200 00
Ferris Township Roads (Nosbonsing Road, from Lot 8, Concession 4 south)	200 05
Ferris Township Roads (North Bay and Trout Lake, South Shore Road to Lots 29 and 30)	200 00
Ferris Township Roads (Astorville and Lisawasa on 25 Side Line.)	154 50
Ferris Township Roads (15 Side Line through Concession 7)	160 06
Forced Line between Lots 32 and 33 Hagarty	230 00
4th Con. Raglan to Boundary	354 76
Fergeslea and Shamrock Road	250 25
Ferguson Lake and Mount St. Patrick Road	237 20
5th Con. Line of Horton	199 22
Green Bay Road in Bedford	300 67
Gibbons, Con. 1 and 2	200 43
Gibbons and Bastedo Town Line	199 99
Galway Tp. Roads (Hughes Section)	100 00
Galway Tp. Roads (Reid Section)	201 87
Galway Tp. Roads (Allan Section)	106 00
Galway Tp. Roads (Hunter Section)	254 00
Galway Tp. Roads (Henderson Section)	100 12
Galway Tp. Roads (White Section)	300 00
Galway Tp. Roads (Jackson Section)	50 00
Gore Line Road	300 12
Germanicus Road	299 62
Gratton, 6 Con. Road (O'Brien Section)	251 50
Gratton, 6 Con. Road (Gervais Section)	199 62
Griffith and D'Acre, between Bridge and Opeonga Line	397 70
Glamorgan & Cardiff (Monk Road from Gooderham to Boundary of Monmouth)	549 62
Glamorgan & Cardiff (Road between Sections 5 and 6 Glamorgan from Burnt River)	200 12
Glamorgan & Cardiff (Monk Road from Deer Lake Road and Con. 17 from Deer Lake Road)	702 60
Glamorgan & Cardiff (Monk Road from Lot 13, Con. 7, Gooderham and Buckhorn Road from Boundary of Dysart)	404 08
Glamorgan & Cardiff (Bridge over Clear Lake Creek at Deer Lake Station)	601 06
Glamorgan & Cardiff (Monk Road from Lot 31 to Boundary of Monmouth)	151 23
Glamorgan & Cardiff (Blasting Rock, Graham Section)	297 64
Glamorgan & Cardiff (Blasting Rock, Hales Section)	77 00
Harton Road in Kaladar	200 00
Harlow and Cloyne Road	207 50
Horse Shoe and West End Road, Kenebec	200 00
Hichinbrooke 4th Concession Road	200 37
Howe Island Road	200 00
Hinchinbrooke Road, Hartington to Conways	200 00
Hybla Station Road	500 87
Herschell Tp. 3rd Concession Road	300 19
Hastings Road and Egan Creek Bridge	695 17

Name of Work.	Expenditure.
Hastings Road	$300 25
Hastings Road to Egan Estate	500 59
Hugel and Crerar Boundary, Sturgeon River	480 00
Hugel between Concessions 1 and 2	199 51
Hagar Tp. By-Law Roads	440 06
Hanmer Tp. By-Law Road	781 50
Harvey Tp. Roads north (Graham Section)	178 11
Harvey Tp. Roads north (Pluard Section)	152 25
Harvey Tp. Roads north (Brummell Section)	125 50
Harvey Tp. Roads north (Ingram Section)	300 00
Harvey Tp. Roads north (Spafford Section)	75 00
Harvey Tp. Roads north (Oliver Section)	75 00
Harvey Tp. Roads south (Elliott Section)	199 75
Harvey Tp. Roads south (Weir Section)	199 00
Harvey Tp. Roads south (Hunt Section)	97 85
Hagarty between 10 and 11 Con	200 60
Horton Tp. Road	201 01
Hagarty and South Algona Town Line	325 25
Horton and Admaston Town Line	250 00
Hill Town Line between Horton and Ross	100 00
Hyde Chute and Sanson Road	301 90
Hills Bridge	393 33
Inverary and Battersea Road	200 00
Jones Falls and Battersea Road	295 25
Jones Falls Road	200 00
Jennings and Appleby Boundary Road	499 90
Kirkpatrick, Concession 6	299 90
Kirkpatrick, between Lots 8 and 9	200 83
Killaloe Roads (Pecore Section)	200 50
Killaloe Roads (Cybulskie Section)	200 00
Killaloe Roads (Harrington Section)	407 15
Limerick Township By-law	800 00
Lamable and Bancroft Road	201 93
Lyle Road to Madawaska	400 00
L'Amable and Fort Stewart Road	900 00
Lonsdale and Lyon Lake	299 40
Lanark Township, 10th Concession	299 88
Labrosse Road in Badgerow	500 00
Laroque Road	199 58
Lacassie Road in Caldwell	300 06
Leduc Road	518 15
Long Lake Road in Broder	395 85
Long Lake, McFarlane Lake and 3rd Concession Road in Broder	500 58
Landing, to Monetville	301 01
Lake Dore Roads (Martin Section)	296 85
Lake Dore Roads (Petznick Section)	100 00
Lyndock and Foymount Road	350 75
Lyndock and Raglan Road	200 45
Lines between Hagarty and Sherwood	200 58
Line between Lyndock and Sebastopol	259 60
Mississippi Road through Denbigh and Abinger	200 50
Mountain Grove and Long Lake Road	205 00
Mountain Road in Miller	200 00
Mast Road in Bedford	196 27
McKenzie Lake Road	302 50
Montague and Elmsdale Town Line	507 07
Morton and Jones' Falls Road	100 00
Mattawa and Pembroke (Head Township 19 and 20, repairing Road and Bridge)	400 00
Mattawa and Pembroke (Swamp Lot 20 in Clara)	203 90
Mattawan Township (Concession 3, from Lot 39 West)	201 75
Mattawan Township (Concession 2, Lot 30 West)	98 97
Mattawan Township (Les Erables, Lot 30, Concession 8 to Concession 12)	150 00
Mattawan Township (Lot 34, Concession 8, Lot 33, Concession 9)	150 00
Mattawan Township (Concession 6, Lot 35 West)	200 55
Mattawa and Bonfield (Concession 10, from 25 Side Line East)	100 00
Mattawa and Bonfield (Concession 12, from 25 Side Line East)	200 27
Mattawa and Bonfield (Lot 23 East into Papineau)	199 95
Martland Township By-law	450 00
Martland Roads (St. George Section)	510 05
Martland Roads (Arbour Section)	500 78

Name of Work.	Expenditure.
Monetville Road	$300 21
McPherson North Boundary	300 00
McPherson, Concession 5 Road	300 81
Mara Township Road, Conditional	695 00
Morrison and Rana Town Line	250 00
Monck Road west of Sebright	193 60
Mara and Carden Town Line South	200 00
Methune Roads (Dulmage Section)	100 99
Methune Roads (Pacey Section)	165 00
Methune Roads (White Section)	149 10
Monmouth, Sherbourne and Snowden Roads (Haliburton Road, from Lot 20 to 28 Monmouth	505 58
Monmouth, Sherbourne and Snowden Roads (Gelert Road and Bridge over Burnt River	250 00
Monmouth, Sherbourne and Snowdon Roads (Concession Line 6 and 7 Snowden and South Dutch Line)	150 12
Monmouth, Sherbourne and Snowden Roads (10th Concession Line from Tory Hill	200 00
Bobcaygeon Road from Boundary of Minden	100 00
Hollow Lake Road	300 00
Minden, Lutterworth, Ansen and Hinden Roads (Haliburton Road west from Dysart	149 75
Minden, Lutterworth, Ansen and Hinden Roads (Concessions 1 and 4 Ansen, Concession 4 Hinden and Bobcaygeon Road)	499 60
Minden, Lutterworth, Ansen and Hinden Roads (Gelert Road south of Minden Village)	200 97
Minden, Lutterworth, Ansen and Hinden Roads (4th Concession and North Shore Road in Minden)	199 45
Minden, Lutterworth, Ansen and Hinden Roads (Lutterworth and Summerville Boundary and Hopkins Road)	300 25
Minden, Lutterworth, Ansen and Hinden Roads (Road north from Elsie in Snowden)	99 74
Minden, Lutterworth, Ansen and Hinden Roads (Lutterworth Road and Miners' Bay Road)	200 00
Minden, Lutterworth, Ansen and Hinden Roads (Cameron Road in Lutterworth from Boundary of Digby)	251 62
Minden, Lutterworth, Ansen and Hinden Roads (Deep Bay Road from Lot 14 in Lutterworth)	104 25
Musklow Road to Sebastopol	200 00
Mount St. Patrick and D'Acre Road	308 20
Main Opeongo Line, D'Acre to Davidson	407 17
North Shore Road, Loboro Lake	198 00
North Sherbrooke Road	225 00
Nipissing Junction Road	300 00
North Bay and Bonfield (Lot 11, Concession 11 East in Ferris)	249 95
North Bay and Bonfield (Centre of Lot 13 East through Concession 11 in Ferris)	250 00
Neelon and Garson By-law	2,000 00
North Algona Roads (4th Proving Line)	150 35
North Algona Roads (16th Concession Road)	201 09
North Algona Roads (1st Proving Line)	150 00
North Algona Roads (Golden Lake Road)	200 00
North Algona Roads (Low Section)	100 67
New Trunk Roads (Victoria Creek and Abitibi Road	2,478 77
New Trunk Roads, Cutting and Clearing (Sudbury, Capreol and Hutton) 1st Section	148 00
New Trunk Roads, Cutting and Clearing (Sudbury, Capreol and Hutton) 2nd Section	525 00
New Trunk Roads, Cutting and Clearing (Sudbury, Capreol and Hutton) 3rd Section	350 00
New Trunk Roads (1st Section Grading)	3,470 00
New Trunk Roads (2nd Section Grading)	1,050 00
New Trunk Roads (Locating and Surveying)	2,805 91
New Trunk Roads (Advertising Contracts)	23 76
New Trunk Roads (Sudbury, Blezard Ditching)	249 72
New Trunk Roads (Surveying and Locating Ft. William and Blake Township Road)	471 75
New Trunk Roads (Elk Lake and Lake Gowganda Road)	1,500 00
New Trunk Roads (Bear Lake Bridge on Gowganda Road)	645 00
New Trunk Roads (Blazing Trail on Elk Lake and Gowganda Road)	138 50

Name of Work.	Expenditure.
New Trunk Roads (Superintending Construction of Elk Lake and Gowanda Road)	$200 00
New Trunk Roads (Surveying and Locating Burwash Lake and Gowganda Road	800 00
Roadmaking Machinery, Graders, Scrapers, Plows, etc.,	
Toronto Pressed Steel Co	869 00
Mussens, Limited	395 70
Canadian Road Machine Company	250 00
Climax Company	413 50
Olden and Kennebec Road	200 00
Opinicon and Perth Road	198 80
Oso and Maberly Road	299 60
Opeongo Road, between Plaunt's and Foymount	326 70
Parham Village to Parham Station	301 37
Perth Road, Bedford Mills to Burgess (McComish Section)	300 00
Perth Road, Bedford Mills to Burgess (Polk Section)	300 00
Perth Road in Bedford	300 73
Papineau Tp. Roads (10th Side Line, from 8th to 6th Con. South)	149 77
Papineau Tp. Roads (Grading Road, Con. 10th, across Lots 11 and 12)	199 20
Papineau Tp. Roads (Repairing Road and Bridge on Con. 10 in front of Lot 20)	50 00
Papineau Tp. Roads (Repairing 30th Side Line from Con. 8 to 10)	99 73
Papineau Tp. Roads (Con. 11 and 12, B. Range, along Lots 6, 7 and 8)	301 12
Papineau Tp. Roads (Repairing Con. 10, from 5th Side Line West)	200 00
Papineau Tp. Roads (Lot 1 and West)	224 99
Papineau Tp. Roads (Con. 8, from Lot 6 East)	150 00
Papineau Tp. Roads (Con. 10 Road)	150 00
Paquette Road, 2nd and 3rd Con., Kirkpatrick	199 73
Paquette Road, 7 and 8, Kirkpatrick	200 00
Proving Line Road in Alice (Proving Line 25 and 26)	201 00
Proving Line Road in Alice (Proving Line 20 and 21)	200 94
Proving Line Road in Alice (Side Line of Alice)	52 00
Proving Line Road in Alice (Proving Line, Alice)	50 00
Pembroke and Eganville (Petzneck Section)	50 00
Pembroke and Eganville (Low Section)	399 55
Pembroke and Eganville (Sweeney Section)	200 00
Pembroke and Eganville (Raglan Section)	300 29
Petewawa Town Line (12th Con. Road)	198 12
Petewawa Town Line (Cossatz Section)	500 75
Petewawa Town Line (Bonnichère Bridge)	150 63
Pembroke and Mattawa (Mud Lake Road)	252 41
Pembroke and Mattawa (1st Proving Line)	260 15
Pembroke and Mattawa (McAnulty Section)	480 00
Pembroke and Mattawa (Brennan Section)	250 50
Pembroke and Beechburg Road (Winters Section)	398 78
Pembroke and Beechburg Road (McGonnigal Section)	499 50
Perault Settlement and Caldwell Station	301 25
Perault Settlement, from 15th Con. to Eganville (McNulty Section)	200 55
Perault Settlement, from 15th Con. to Eganville (Howard Section)	100 00
Perault Settlement, from G. T. Crossing (Turner Section)	153 00
Perault Settlement, from G. T. Crossing (Howard Section)	155 50
Quadville and Jewellville Road	250 00
Quadville and Palmer Rapids Road	238 24
Ramsay, 2nd Con. Road	499 85
Richmond Tp. Road	499 66
Rattar and Hugel Town Line	217 65
Right of Way across Lot 6 in Gibbons (Z. Mogean)	75 00
Rama, Con. L	225 25
Rama, Con. M	230 14
Ross, 1 and 2 (Coulter Section)	200 85
Ross, 1 and 2 (Wolfgram Section)	265 65
Rankin Roads (E. Leach Section)	306 00
Rankin Roads (J. H. Leach Section)	200 35
Rankin Roads (Clarke Section)	150 25
Rolphe Tp. Road	326 02
Road between Opeongo Line, Admaston	259 35
Road between 6th and 7th Con., Hagarty	299 75
Road from Rockingham to Snake River	300 00
Sheffield and Hungerford Town Line	150 20
Snow Road, Ompah to Levant Road	498 90
Sydenham Road to Loboro Lake	216 72
Sunbury and Washburn Road	203 00

Name of Work.	Expenditure.
Sunbury and Battersea Road	$205 00
Seeley's Bay and Battersea Road	100 00
Springer and Caldwell Town Line Road	198 16
Sudbury and Blezard Road (Lot 6, Con. 1 and 2)	794 00
Sudbury and Blezard Road (Pilon Section)	150 00
Sturgeon and Temagami River (Lacroix Section)	1,493 59
Sturgeon and Temagami River (N. Sturgeon River Road)	351 12
Sturgeon and Temagami River (S. Sturgeon River Road, 1st Section)	406 95
Sturgeon and Temagami River (S. Sturgeon River Road, 2nd Section)	399 26
Sturgeon and Temagami River (Crerar Road North)	200 90
Sturgeon and Temagami River (Crerar Road South)	296 95
Sturgeon and Temagami River (N. Sturgeon, 5 and 6 to Gibbons)	150 18
Sturgeon and Temagami River Gibbons, 1 and 2)	186 22
Smoky Falls, Grant and Bidal Roads (Lajeunesse Section)	990 98
Smoky Falls, Grant and Bidal Roads (Simpson Section)	394 41
Smoky Falls, Grant and Bidal Roads (Brissette Section)	397 38
Smoky Falls, Grant and Bidal Roads (Bouvier Section)	200 17
Scollard North Town Line	206 54
Stafford Roads (Con. 3, Stafford)	400 85
Stafford Roads (Side Line 3 and 4)	200 75
Stafford Roads (16th Concession)	253 00
Side Line, Bromley Line to Con. A)	304 67
Side Line northward from Gore Line	250 90
South Algona Roads (McGrath Road)	211 50
South Algona Roads (16th Concession)	300 15
South Algona Roads (Town Line)	300 00
Second Line, Tp. of Stafford	300 25
7th Con. of Hagarty, Lots 7 to 12	251 24
Sherwood, 6th Con., from Boundary of Hagarty	250 83
Shamrock and Calabogie Road	312 50
South Mountain Road in Brougham	301 24
Second Line of Hagarty	302 50
Sherwood, between Lots 10 and 11	201 95
16th Con., between Hagarty and Brudenell	314 25
Springtown and Burnstown Road	197 55
Sullivan Road to Shamrock	310 30
Stanhope and Laxton (Monck Road east from Lot 32 to Lot 25)	203 94
Stanhope and Laxton (Monck Road east from 6th Con. Laxton)	355 00
Stanhope and Laxton (Peterson Road east of Buskong Lake and Buskong Lake to Bobcaygeon)	150 12
Stanhope and Laxton (Lot 7 east to Lot 12 Con. 6 Stanhope)	150 00
Stanhope and Laxton (Lake Shore Road Lot 21 Con. 8 and Side Line 20 and 25).	254 04
Somerville and Bexley Roads (Base Line Con. 5 West and Third Quarter Line from Bexley)	401 05
Somerville and Bexley Roads (Monck Road East of Norland in Somerville)	101 75
Somerville and Bexley Roads (Base Line Road in Bexley from Cameron Road)	100 00
Somerville and Bexley Roads (Monck Road Lots 10 and 11, Swamp)	99 90
Somerville and Bexley Roads (Kinmount Road North from Burnt River)	306 80
Somerville and Bexley Roads (Bobcaygeon Road, Summerville and Verulam)	102 25
Somerville and Bexley Roads (Summerville and Verulam Road Lots 14 to 11).	103 25
Tamworth and Wagersville Road	300 00
Tyendinaga, 9 and 10 Con.	490 17
Town Line, Eldon and Thorah	150 00
Town Line between South Algona and Gratton	298 97
Third Con. Road, Hagarty	250 00
Town Line, Ross and Horton	105 25
Victoria Road in Longford	503 87
Victoria between Victoria Road and Uphill (Ashby Sec.)	301 00
Victoria between Victoria Road and Uphill (Teel Sec.)	303 77
Westport, Clarendon, Mississippi Road	199 76
Wollaston Tp. Roads	400 80
Wolfe Grove Road	491 75
Widdifield Tp. By-Law	200 00
Widdifield Tp. Roads (Road from Smeltzer North through Lot 14)	400 26
Widdifield Tp. Roads (Road between Con. C and B, Lots 21 and 22)	250 00
Widdifield Tp. Roads (6th Line through Con. 1)	199 92
Widdifield Tp. Roads (Line 16 across Con. 2)	134 43
Widdifield Tp. Roads (Lot 4 East in Con. 1)	200 75
Widdifield Tp. Roads (Con. A, Lot 8)	200 00
Widdifield Tp. Roads (North Bay and Cooks Mill Road)	250 10

Name of Work.	Expenditure.
Widdifield Tp. Roads (Line 18 across Con. A and 1)	$150 86
Widdifield Tp. Roads (Con. A and 1 across Lots 16 & 17)	200 00
Warren and Hugel Road	560 00
Warren and Markstay Road	702 00
Wylie Roads (Pembroke and Mattawa)	207 05
Wylie Roads (Buchanan Road)	150 00
Wylie Roads (Chalk River Road)	251 75
Wilberforce Roads (Con. 19 Road)	152 30
Wilberforce Roads (Con. 12 Road)	235 59
Wilberforce Roads (Con. 6 Road)	499 75
Wilberforce Roads (1st Con. Road)	201 10
Wilberforce Roads (Black Creek Road)	152 95
Wilberforce Roads (14th Con.)	200 00
Wilberforce Roads (4th Con. Road)	204 24
Westmeath Road	501 25
Whelan Roads (Whelan Section)	230 20
Whelan Roads (Persyck Section)	244 00
Wilno and Rockingham Roads (Quack Section)	247 50
Wilno and Rockingham Roads (Bloskie Section)	242 10
Balances from 1907 (Long Lake Road)	31 62
Balances from 1907 (Wahnapitae Lake Road)	509 25
Inspection East Division	6,709 05
Inspection Balance 1907	132 00
One Grader for Sturgeon Falls District	250 00
Grant to Good Roads Association	200 00
	$152,701 74

TEMISKAMING DISTRICT.

Armstrong, between Lots 4 and 5 across Con. 1 and 2	$1,208 78
Armstrong, between Lots 10 and 11 across Con. 4	500 00
Armstrong, between Con. 2 and 3 Condel	304 70
Armstrong, between Con. 1 and 2 West road West	1,005 81
Armstrong and Hilliard Road	1,999 88
Bucke By-Law 79	1,000 00
Bucke, between 13 and 14	901 93
Boston Road (Corbeille Section)	2,997 71
Boston Road (Houghton Section)	2,979 60
Beauchamp and Henwood Town Line	965 80
Beauchamp Road	2,498 80
Beauchamp and Dacke between Lots 10 and 11 Con. 6, 1 and 2 (Schaffner Section)	1,297 50
Beauchamp and Dacke (Derby Section)	1,088 63
Buck, between Lots 6 and 7, Con. 6 and 1 Dymond	1,000 47
Buck and Firstbrook Road	977 22
Brethour Road between Lots 6 and 7	1,001 00
Buck, 2nd Con. Road	299 55
Cane and Barber Road	562 00
Chamberlain Township Road	1,262 75
Chamberlain Road North from Englehart	1,989 76
Chamberlain Township Roads	600 24
Chamberlain and Savard Town Line	1,469 97
Charlton and Englehart (Hayes Section)	2,000 00
Charlton and Englehart (Hackett Section)	799 25
Casey and Harristown Line from White River West	497 62
Coleman By-Law	4,000 00
Dymond Township By-Law	1,696 95
Dack, between Lots 2 and 3 Brentha South	1,500 00
Evanturel By-Law	299 93
Englehart Road to New Bridges (Connell Section)	259 30
Englehart Road to New Bridges (Kerr Section)	536 53
Evanturel, between 3rd and 4th Con.	499 40
Evanturel and Ingram Town Line (Contract)	833 84
Evanturel, 8 and 9	999 88
Hudson Township By-Law	2,000 00
Hudson and Kearns Town Line	1,002 18
Hilliard and Harley Town Line	999 82
Henwood and Cain	3,002 04
Henwood and Kearns Town Line	1,471 98
Harley and Casey between Con. 3 and 4	1,498 72
Hilliard Township Roads (Line between Lots 4 and 5)	216 22

Name of Work.	Expenditure.
Hilliard Township Roads (Line between Lots 2 and 3)	$200 00
Hilliard Township Roads (Line between Con. 2 and 3, Lots 5 and 6)	101 00
Hilliard and Armstrong Town Line (Contract)	2,106 56
Harley and Casey between Con. 4 and 5 N. Rd. East	1,545 74
Hudson Bridges on Lot 6, Con. 6	512 44
Harley Township By-Law	2,000 00
Ingram, Concession 4	500 00
Ingram, South Boundary (Contract)	550 00
Improving Elk Lake Road	180 00
Keys Road, Harris and Casey	2,001 61
Kerns By-Law	933 00
Marter Township Road	1,497 42
Montreal River Roads through Bryce	770 40
Otter Creek Road	1,027 28
Portage Road, Stoney Creek and Montreal River	139 64
Pacaud and Chamberlain Town Line (Levy Section)	250 00
Pacaud and Chamberlain Town Line (Swinston Sec.)	751 94
Repairing Old Roads (Brown Section)	1,004 90
Repairing Old Roads (Ball Section)	983 10
South Boundary of Marter	994 56
Savard and Robillard Town Line	1,496 67
Sasaginaga Lake Road	1,004 91
Silver Centre Road	1,958 35
Tomstown Road North	1,980 39
Wright's Creek Road	1,000 15
Repairing Bridge, Charlton Road (Kerns and Armstrong)	120 00
Fitzpatrick Bay and Larder Lake Road	300 13
Balance of Inspection for 1907	70 00
Inspection of Temiskaming District for 1908	1,303 00
Balance, Kerns and Armstrong Road	13 55
Balance, Harrison and Casey Road, 1906, Train Contract	84 10
Grader for Kerns Township	250 00
Grader for Harley Township	250 00
Grader for Dymond Township	250 00
Stumping Machine, Temiskaming	520 25
Grader for Bucke Township	250 00
Cartage etc., on Stumpers and Machinery, Temiskaming District	5 68
Total	$80,933 03

RECAPITULATION.

North Division	$182,960 67
West Division	43,299 29
East Division	52,701 74
Temiskaming District	180,933 03
Total	$459,894 73

M. P. DOHERTY,
Accountant, Colonization Roads

DEPARTMENT OF PUBLIC WORKS,
TORONTO, December 31st, 1908

STATEMENTS

OF THE

ACCOUNTANT, Etc.

Department of Public Works, Ontario.
Toronto, February, 1909.

Hon. J. O. Reaume,
Minister of Public Works, Ontario.

Sir,

I have the honor to submit the following statements of capital expenditure on public buildings, works, roads, aid to railways, etc., and of contracts entered into in connection therewith, being; (1) The capital expenditure for public buildings and public works, etc., for the year 1908; (2) the total capital expenditure on public buildings, public works, colonization and mining roads, aid to railways, etc., from the first of July, 1867, to 31st of December, 1908; (3) a classified statement showing (a) the expenditure from 1st of July, 1867, to 31st of December, 1904; (b) the expenditure from 1st of January, 1905, to 31st of December, 1908; and (c) the grand total of expenditure from 1st of July, 1867, to 31st of December, 1908; and (4) a statement showing the several contracts and bonds entered into with His Majesty during the year 1908 for the carrying out of the sundry works under the control of the Department.

I have the honor to be,

Sir,

Your obedient servant,

J. P. EDWARDS,

Accountant, etc.

STATEMENT No. 1.

Being statement of expenditure on Capital Account, Public Buildings and Public Works, etc., for the year 1908. *(See also Statement No. 2.)*

Name of Work.	—	Amount.
	$ c.	$ c.
PUBLIC BUILDINGS—		
Osgoode Hall, Toronto		45,444 25
Hospital for Insane, Toronto		6,580 07
" Mimico		14,233 55
" London		25,491 66
" Hamilton		18,580 86
" Kingston		16,049 58
" Brockville		21,372 53
" Cobourg		1,457 83
" Penetanguishene		23,238 24
" Woodstock		17,838 69
" Feeble Minded, Orillia		4,819 02
Central Prison, Toronto		1,694 79
Reformatory for Females, Toronto		2,972 86
Institute for Deaf and Dumb, Belleville		3,754 28
" Blind, Brantford		6,345 91
Education Department and Normal and Model Schools, Toronto		5,746 52
Normal and Model Schools, Ottawa		12,095 41
Normal School, London		13,420 72
Additional Normal Schools (four in all) :		
Stratford	39,660 62	
Hamilton	40,126 47	
Peterborough	45,764 85	
North Bay	51,005 85	176,557 79
Agricultural College, Guelph		34,574 86
Fruit Experimental Station, Jordan Harbour		18,908 80
Immigration House, etc., Toronto		743 09
Winter Fair Building, Guelph		101 25
Muskoka District :		
Registry Office, Lockup, etc., at Bracebridge		1,443 53
Nipissing District :		
Court House, Gaol and Registry Office, North Bay	840 83	
Lockup at Englehart	825 00	1,665 83
Parry Sound District :		
Additions to Gaol, Parry Sound	2,785 41	
Registry Office, "	4,302 37	
Repairs to Gaol, "	325 64	
Lockup, Burk's Falls	161 50	7,574 92
Manitoulin District :		
Gaol and Court House, Gore Bay	4,668 31	
Lockup, Manitowaning	200 00	4,868 31
Sudbury District :		
Court House, etc., Sudbury	41,288 71	
Registry Office, "	7,915 96	49,204 67
Algoma District :		
Court House, Gaol, etc., Sault Ste. Marie	315 88	
Registry Office, Sault Ste. Marie	6,363 78	
Lockup at Webbwood	99 91	
" Blind River	1,000 00	7,779 57
Rainy River District :		
Lockup, Court Room, etc., Kenora	314 84	
Registry Office, Fort Francis	998 91	
New Gaol at Fort Francis	10,312 18	11,625 93

STATEMENT No. 1.—*Continued.*

Name of Work.	—	Amount.
Thunder Bay District:	$ c.	$ c.
Alterations to Gaol, Port Arthur	3,339 77	
" Registry Office, Port Arthur	6,396 34	
New Lockup at Schrieber	700 00	10,436 11
PUBLIC WORKS—		
Goulais River Bridge, to complete		265 24
White River Bridge and Approaches, Marter Township		2,297 98
Clear Creek Bridge, Oxford Township		500 00
Kinmount and Gooderham Bridges		439 62
Beeline Bridge, Alice Township		499 63
Sherbineau Bridge, Hungerford Township		500 00
Round Lake Bridge, Hagarty		500 00
Slate River Bridge, Kaministiquia River		580 14
Veuve River Bridge, Kirkpatrick Township		541 06
Shadow River Bridge, Humphrey Township		490 90
Mary's and Fairy Lakes, Improving Channel		134 54
Filiatrault Bridge, Boundary between Martland and Cosby		699 99
North and Black Rivers, Removing obstructions		799 43
Mississippi River, Munroe's Rapids, Removing obstructions		900 00
White Stone Lake Bridge, Parry Sound District		706 40
Ardoch Bridge, Frontenac County		900 00
Culls Barry Bay Bridges and Colabogie Bridge		931 48
Bushkong Lake Bridge, Peterson Road		957 76
Steidler Creek Bridge, Parry Sound District		954 47
Bonnechere River Bridge		1,000 00
Bridge on Townline between Dymond and Harris		911 28
York Branch River Bridge in Dungannon Township		1,194 31
Sauble River Bridge		1,146 58
Kearney Bridge		1,183 02
Minden Bridges		1,288 23
Black Creek, Removing obstructions Monck and Watt Townships		1,480 76
Bell's Rapids Bridge, Renfrew County		1,509 38
Norland Bridge, Cameron Road		1,354 70
Dawson Road Bridges		1,480 36
Spanish River Bridge and Approaches, Webbwood		1,440 40
Mud Creek Bridge, Herschell Township		1,800 00
White River Bridge, Pecaud Boundary		1,998 93
Piers and Booms, Jeanettes Channel		1,585 75
Thessalon and Larchwood Bridges		1,995 24
Round Lake Road Bridges		1,951 80
Lake St. John and Sucker Creek, Improving outlet		1,795 56
Nottawasaga River, Removing obstructions		1,859 87
Improving Kemp's Channel		1,464 74
Hope Township, towards purchase of Toll Road		2,300 00
Pautois Creek Bridge, Calvin		2,373 82
Burk's Falls Bridge, Magnetawan River		2,606 14
Englehart Bridge and Approaches		2,795 39
Oakley Bridge, Muskoka		3,240 03
Pine River Bridge, Rainy River District		3,241 30
Palmer's Rapids Bridges, Renfrew Township		3,908 71
Big East River Bridge		3,997 93
West Arm Bridge, Lake Nipissing		3,378 23
Burnt River Bridge, (Somerville Bridges)		4,496 26
Hilliardton Bridge over White River		5,460 89
LaBlanche River Bridge and Approaches, Casey Township		5,817 72
Dorset Bridge, Dorset Township		6,315 79
Espanola Bridge		10,203 71
Mississauga River Bridge, Thompson Township		17,989 78
Reflooring Iron Bridge, over Mississauga River		462 60
Spanish River Bridge, Massey		13,998 53
Stephenson Float Bridge		808 15
Surveys, Inspections, Arbitrations and Awards, etc		726 78
Maintenances of Locks, Dams, Bridges, Dredging, etc		14,714 88
Equipment, Instruments, Machinery, etc		2,660 50

STATEMENT No 1—*Concluded.*

Name of Work.	—	Amount.
		$ c.
PUBLIC WORKS—*Continued*—		
To pay for stock injured by blasting at North River	.....	135 00
Gratuity to Arthur Brown, injured at Tomstown Bridge, and medical attendance	.....	140 00
Bridge across Hudson Creek, Kearns Township	.....	1,792 94
Township of London, Proof Line Toll Road	.....	366 00
DRAINAGE WORKS—		
Bromley Township Drainage scheme	.....	1,000 00
McIntyre Creek Drainage Works, Drummond Township	.....	1,000 00
Merrick Creek Drainage Works, South Sandwich Township	.....	1,000 00
Dawn and Enniskillen Townline drain	.....	1,500 00
Pike Drainage Works, Tilbury East Township	.....	2,000 00
Dauphin Drainage Works, Raleigh Township	.....	2,000 00
Aux Raisin Drainage scheme	.....	4,000 00
Cavan Township Drainage Works	.....	2,000 00
Ruscombe Drainage Works, Rochester Township	.....	2,000 00
Logan North-west Drain, Logan Township	.....	500 00
Hardy Creek Drainage Works, Adelaide Township	.....	1,500 00
Total	.....	741,092 07

J. P. EDWARDS,
Accountant.
Public Works.

Department of Public Works, Ontario
Toronto, February, 1909.

STATEMENT No. 2.

Being a statement of expenditures on Capital Account for Public Buildings, Public Works, Colonization and Mining Roads, Aids to Railways, etc., as follows: (1) The total of expenditure from 1st July, 1867, to 31st December, 1907; (2) The expenditure for the year 1908, and (3) The grand total of expenditure from 1st July, 1867, to 31st December, 1908.

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907.	Expenditure 1908.	Total Expenditure to 31st Dec., 1908.
PUBLIC BUILDINGS—	$ c.	$ c.	$ c.
Government House	183,860 86		183,860 86
Old Parliament and Departmental Buildings (Construction Account)	85,285 98		85,285 98
New Parliament and Departmental Buildings (Construction Account)	1,282,679 04		1,282,679 04
New Parliament and Departmental Buildings (equipment, grounds, roads, plant house, etc.)	230,934 62		230,934 62
Hospital for Insane, Toronto	413,749 29	6,580 07	420,329 36
" Mimico	672,375 67	14,233 55	686,609 22
" London	1,071,330 10	25,491 66	1,096,821 76
" Hamilton	956,941 22	18,580 86	975,522 08
" Kingston	555,025 00	16,049 58	571,074 58
" Brockville	525,072 51	21,372 53	546,445 04
" Cobourg	131,099 86	1,457 82	132,557 68
" Penetanguishene	77,382 62	23,238 24	100,620 86
Hospital for Epileptics, Woodstock	206,059 91	17,838 69	223,898 60
" Idiots, Orillia	570,122 67	4,819 02	574,941 69
Central Prison, Toronto	945,108 44	1,694 79	946,803 23
Andrew Mercer Reformatory for Females, Toronto	263,964 54	2,972 86	266,937 40
Reformatory for Boys, Pentanguishene	191,512 00		191,512 00
Institution for Deaf and Dumb, Belleville	348,553 40	3,754 28	352,307 68
Institution for Blind, Brantford	294,542 20	6,345 91	300,888 11
Education Department and Normal and Model Schools, Toronto	241,328 31	5,746 52	247,074 83
Normal and Model Schools, Ottawa	246,946 32	12,095 41	259,041 73
Normal School, London	105,288 02	13,420 72	118,708 74
Normal Schools, additional (four in all)	4,618 33		4,618 33
" Stratford	36,552 89	39,660 62	
" Hamilton	42,501 77	40,126 47	
" Peterborough	34,812 71	45,764 85	
" North Bay	15,659 39	51,005 85	306,084 55
Normal College, Hamilton (equipment Domestic Science Room	854 25		854 25
School of Practical Science (College of Technology)	59,100 26		59,100 26
School of Practical Science, Queen's Park	252,535 56		252,535 56
School of Practical Science, New Chemistry and Milling and Mining Building	448,213 15		448,213 15
Agricultural College, Guelph	759,592 21	34,574 86	794,167 07
Fruit Experimental Station, Jordon Harbour		18,908 80	18,908 80
Dairy School, Strathroy	14,583 71		14,583 71
Dairy School, Kingston	19,722 18		19,722 18
Children's Shelter, Toronto	7,012 35		7,012 35
School of Mining, Kingston	4,070 00		4,070 00
Osgoode Hall, Toronto	148,062 85	45,444 25	193,507 10
Immigration House, Toronto	4,964 63	743 09	5,707 72
Agricultural Hall	324 00		324 00
Government Farm, Mimico	51,646 34		51,646 34
Pioneer Dairy Farm, Algoma	5,178 43		5,178 43
Brock's Monument, Queenston Heights	4,605 31		4,605 31
Niagara River Fence	8,025 43		8,025 43
Winter Fair Building, Guelph		101 25	101 25

STATEMENT No. 2.—*Continued.*

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907.	Expenditure 1908.	Total Expenditure to 31st Dec., 1908.
PUBLIC BUIDINGS—*Continued.*			
ALGOMA DISTRICT—	$ c.	$ c.	$ c.
Court House, Gaol and Registry Office, etc., Sault Ste. Marie	31,863 63	315 88	32,179 51
Grand Manitoulin Island, three lockups (Gore Bay, Little Current and Manitowaning)	22,287 60	.....	22,287 60
Addition to Registry Office, Sault Ste. Marie	4,152 91	6,363 78	10,516 69
Lockup, Killarney	1,298 97	.....	1,298 97
" Bruce Mines	3,117 48	.....	3,117 48
" Webbwood	1,649 24	99 91	1,749 15
" Thessalon	2,221 99	.....	2,221 99
" Massey	702 74	.....	702 74
" Blind River	1,042 87	1,000 00	2,042 87
" Chapleau	1,126 49	.....	1,126 49
" Wawa	1,330 16	.....	1,330 16
" Cutler	864 70	.....	864 70
" Chelmsford	511 90	.....	511 90
" Nairn	300 00	.....	300 00
" Echo Bay	500 00	.....	500 00
MANITOULIN DISTRICT—			
Gaol, etc., Gore Bay	3,002 58	4,668 31	7,670 89
Lockup, Manitowaning	63 85	200 00	263 85
THUNDER BAY DISTRICT—			
Registry Office and Lockup, Court House, etc., Port Arthur	53,535 21	9,736 11	63,271 32
Lockup at Fort William	9,723 90	.....	9,723 90
" Silver Islet, Lake Superior	2,304 79	.....	2,304 79
" Nepigon	1,229 23	.....	1,229 23
" Schrieber (new)	.....	700 00	700 00
MUSKOKA DISTRICT—			
Immigration Sheds at Gravenhurst	355 00	.....	355 00
Registry Office and Lockup at Bracebridge	30,876 64	1,443 53	32,320 17
Lockup and Court Room at Huntsville	8,364 85	.....	8,364 85
Lockup and Court Room at Bayside	300 00	.....	300 00
PARRY SOUND DISTRICT—			
Registry Office, Lockup and Court Room, House for Gaoler, etc., Parry Sound	37,195 68	7,413 42	44,609 10
Lockup at Magnetawan	645 56	.....	645 56
Lockup and Court Room at Burk's Falls	6,460 46	161 50	6,621 96
Lockup at French River	1,198 62	.....	1,198 62
" Dunchurch	609 00	.....	609 00
" Emsdale	300 00	.....	300 00
" Byng Inlet	1,232 35	.....	1,232 35
" South River	500 00	.....	500 00
" Pawassan	1,250 00	.....	1,250 00
NIPISSING DISTRICT—			
Lockup at Mattawa	14,949 19	.....	14,949 19
Lockup, Court Room and Registry Office, and Gaoler's House, North Bay	38,255 39	840 83	39,096 22
Lockup at Sudbury	12,595 48	.....	12,595 48
" Sturgeon Falls	2,266 28	.....	2,266 28
" New Liskeard	657 00	.....	657 00
" Warren	600 00	.....	600 00
" Bonfield	694 67	.....	694 67
" Cobalt	4,728 39	.....	4,728 39
" Markstay	600 00	.....	600 00
" Englehart	.....	825 00	825 00

STATEMENT No. 2.—*Continued.*

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907.	Expenditure 1908.	Total Expenditure to 31st Dec., 1908.
PUBLIC BUILDINGS.—*Continued.*			
RAINY RIVER DISTRICT—			
Lockup, Court Room and Gaoler's Residence, New Registry Office, etc., Rat Portage (Kenora)	$ c. 36,692 83	$ c. 314 84	$ c. 37,007 67
Registry Office, Fort Frances	.....	998 91	998 91
New Gaol at Fort Frances	.....	10,312 18	10,312 18
Lockup at Fort Frances	6,237 86	.....	6,237 86
" Mines Centre	1,205 48	.....	1,205 48
" Emo	1,888 94	.....	1,888 94
" Atikokan	1,566 31	.....	1,566 31
" Beaver Mills	1,840 71	.....	1,840 71
" Dryden	521 00	.....	521 00
SUDBURY DISTRICT—			
Court House and Gaol, Sudbury	11,585 85	41,288 71	52,874 56
Registry Office, Sudbury	1,875 08	7,915 96	9,791 04
COUNTY OF HALIBURTON—			
Registry Office at Minden	5,918 42	.....	5,918 42
PUBLIC WORKS—			
Young's Point Lock	31,192 72	.....	31,192 72
Balsam and Cameron Lakes Locks	23,959 02	.....	23,959 02
Mary's and Fairy Lakes Lock Works and Bridge over Muskoka River at Huntsville	80,438 37	.....	80,438 37
Mary's and Fairy Lakes Lock Works to renew high bridge above lock over Muskoka River, and renew cribbing above and below locks	8,254 85	134 54	8,389 39
Magnetawan Works, lock, swing bridge, dam and river improvements; dam and slide, Deer Lake; swing bridge, Township of Ryerson; dredging Burk's Falls; and removing obstructions, Ah-Mic Lake	74,461 10	.....	74,461 10
High Falls, Pigeon River, slide, dam, etc. (C.L.D.)	9,706 07	.....	9,706 07
Georgian Bay Works	7,149 97	.....	7,149 97
Landing Pier at Port Elgin	2,750 00	.....	2,750 00
Landing Pier at Southampton	2,022 63	.....	2,022 63
Docks at Southampton, Saugeen River	1,739 04	.....	1,739 04
Docks on the Rainy River	3,163 44	.....	3,163 44
Docks (landing) at Beaudrault's Wabigoon	777 95	.....	777 95
Muskoka Lake Works	21,915 30	.....	21,915 30
Muskoka Lakes Works, lock, bridges and dredging at Port Carling	64,683 45	.....	64,683 45
Muskoka Lakes Works, cut and bridge at Port Sandfield	16,842 86	.....	16,842 86
Muskoka Lakes Works, Muskoka Falls, works and bridges at Bala	8,579 37	.....	8,579 37
Muskoka Lakes Works, Joseph River Works, less contribution	486 87	.....	486 87
Muskoka Lakes Works, Kemp's Channel improvements	2,773 95	1,464 74	4,238 69
Muskoka Lakes Works, piers and boom, Jeannette's Channel	.....	1,585 75	1,585 75
Nipissing Lake Works	9,182 17	.....	9,182 17
Couchiching Lake Works	427 82	.....	427 82
Mud Lake Works (Township of Dalton)	1,502 32	.....	1,502 32
Kushog Lake Dam	300 00	.....	300 00
Mississicua Lake Dam	4,989 84	.....	4,989 84
Star Lake Works	412 22	.....	412 22
Manitou Lake Works, dam at outlet, etc., Rainy River District	2,794 14	.....	2,794 14

STATEMENT No. 2---*Continued*

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907.	Expenditure 1908.	Total Expenditure to 31st Dec., 1908.
PUBLIC WORKS—*Continued.*	$ c.	$ c.	$ c.
Inkerman Dam, removal of, County Dundas....	1,000 00	.....	1,000 00
Bottle Lake Dam and Mississicua Creek Dam ...	4,068 72	.....	4,068 72
Shoal Lake and Lake of the Woods Improvements, Ash Rapids.....	5,998 25	.....	5,998 25
Mill Creek Improvements (County Prescott)....	1,000 00	.....	1,000 00
Lake of Bays, dredging mouth of river at outlet of.....	581 82	.....	581 82
Peninsula Creek Improvements, bridges, cribbing, etc.....	37,295 66	.....	37,295 66
Stony Creek Works (Township of Ops)	4,828 25	.....	4,828 25
Union Creek Improvements	1,050 63	.....	1,050 63
Bear Creek, dam and slide.....	1,617 52	.....	1,617 52
Lake Scugog Works, dredging at Port Perry	977 53	.....	977 53
Lake Scugog Flats Road	1,500 00	.....	1,500 00
Neighick Lake, dredging at entrance to.....	898 15	.....	898 15
La Vase and Boon Creeks, improvements to	804 22	.....	804 22
Cobb's Lake Outlet.....	1,102 08	.....	1,102 08
Gull and Burnt River Works, dams, slides and bridges, etc.....	100,716 60	.....	100,716 60
Muskoka River Works	42,670 53	.....	42,670 53
" Bridge at South Falls.....	1,000 00	.....	1,000 00
" " Port Sydney.....	1,000 00	.....	1,000 00
Sydenham River Works.....	2,156 26	.....	2,156 26
Nottawasaga River Works	5,915 09	1,859 87	7,774 96
Kaministiquia River Works	22,865 02	.....	22,865 02
Scugog River Works (including Lindsay lock and swing bridges).....	97,897 38	.....	97,897 38
Pigeon River Works (County of Victoria)	4,999 62	.....	4,999 62
Otonabee River Works.....	9,162 91	.....	9,162 91
Balsam River Works	16,585 11	.....	16,585 11
Wye River Works	5,176 98	.....	5,176 98
Squaw River Works.....	1,688 16	.....	1,688 16
Moose River Works (County of Stormont).....	1,000 00	.....	1,000 00
Black River Works (Lake Simcoe).....	3,136 10	.....	3,136 10
Jean Baptiste River, construction of bridge over (Township of Beauchamp).....	2,850 00	.....	2,850 00
Mattawa River Works and Bridge.....	22,094 02	.....	22,094 02
Wabis River Works (Townships Dymond, Harris and Kearns.....	1,340 51	.....	1,340 51
Wabis River Bridges.....	2,773 33	.....	2,773 33
New Liskeard Bridge, over Wabis River..	4,000 00	.....	4,000 00
Wabis Creek, to construct bridge over.....	1,760 08	.....	1,760 08
Squaw River Works, dam at Harvey.....	581 56	.....	581 56
Indian River Works, deepening, Townships Sarawak and Keppell	1,850 82	.....	1,850 82
Whitefish River, removing obstructions.....	249 15	.....	249 15
North and Black Rivers, removing obstructions.	3,394 70	799 43	4,194 13
Bar River, Township of McDonald, removing obstructions	130 55	.....	130 55
Cassimer River, removing obstructions.....	205 56	.....	205 56
McKenzie Creek, improvements	200 35	.....	200 35
Snake River, improvements.....	140 65	.....	140 65
Madawaska River, swing bridge at Combermere; bridge Burston and bridge Township of Raglan	12,171 43	.....	12,171 43
Madawaska River, bridge near Arnprior.....	3,000 00	.....	3,000 00
Nation River Works, bridge, etc.....	15,877 23	.....	15,877 23
Nation River contribution	4,000 00	.....	4,000 00
Petewawa River Bridge	3,879 25	....	3,879 25
Sturgeon River Bridge, Township of Field.....	3,616 08	.....	3,616 08

STATEMENT No. 2.—*Continued.*

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907.	Expenditure, 1908.	Total expenditure to 31st Dec., 1908.
	$ c.	$ c.	$ c.
PUBLIC WORKS.—*Continued.*			
Sturgeon River Bridge, Township of Gibbons	2,610 35		2,610 35
To construct steel bridge at outlet Lake of the Woods, at Rat Portage (Kenora)	26,455 82		26,455 82
Rainy River Road Bridge	4,429 84		4,429 84
Stanley Bridge, Thunder Bay District	8,136 09		8,136 09
Blind River Bridge	2,772 34		2,772 34
Buck Lake Bridge, to rebuild	305 06		305 06
Black River Bridge, to rebuild, Township of Draper, Muskoka	509 48		509 48
To rebuild bridges in Frontenac, destroyed by fires: Clyde River, Mud Lake and Concession 1st, Clarendon	3,288 06		3,288 06
*Kinmount Bridge	1,500 00		1,500 00
Bridge over Jean Baptiste, Township of Armstrong	98 31		98 31
Round Lake Road Bridges	350 10	1,951 80	2,301 90
Baysville Bridge	2,047 50		2,047 50
Calabogie Bridge, Township of Bagot	1,800 00		1,800 00
Echo River Bridge	1,332 11		1,332 11
Wasdale Bridge, Ontario and Simcoe	1,000 00		1,000 00
Wahnapitae River Bridge and approaches	4,642 49		4,642 49
Delta Creek improvements	99 24		99 24
Bridge over West Arm, Lake Nipissing	7,881 85	3,378 23	11,260 08
Wolsley River Bridge, Township of Mattawa	974 20		974 20
Bridge over Sunday Creek	603 00		603 00
Bridge over La Blanche River	2,929 87		2,929 87
La Blanche River Bridge, Tomstown	6,326 68		6,326 68
La Blanche River Bridge and approaches, Casey Township		5,817 72	5,817 72
Severn Bridge, Township of Morrison	3,350 00		3,350 00
Seguin River Bridge	3,754 00		3,754 00
Bridge on Wawa Road	1,198 39		1,198 39
Black Bridge, Muskoka, construction of	1,500 00		1,500 00
Gannon's Narrows Bridge, construction	1,000 00		1,000 00
Chemong Lake Bridge	3,500 00		3,500 00
Veuve River Bridge, Township of Dunnette	918 70		918 70
Veuve River Bridge, Township of Verner	5,719 38		5,719 38
Bridge over Wright's Creek, Township of Casey	1,813 35		1,813 25
Reflooring Bridge at Pine Wood, Rainy River District	375 00		375 00
White River Bridge, Pecaud Boundary	199 28	1,998 93	2,198 21
White River Bridge and approaches, Marter Township	887 47	2,297 98	3,185 45
Bridge at Eau Claire	2,686 39		2,686 39
Bell's Rapids Bridge, grant	700 00		700 00
Wabigoon Bridge	2,892 79		2,892 79
Thessalon and Larchwood Bridges	5,774 45	1,995 24	7,769 69
Mississauga River Bridge, Thompson Township	3,729 41	17,989 78	21,719 19
Espinola Bridge	7,776 52	10,203 71	17,980 23
Oxtongue Bridge	1,058 26		1,058 26
Port Severn, Axe Lake and Cooper Bridges	1,427 41		1,427 41
Housey's Rapids Bridge	3,565 03		3,565 03
Draper Bridge	500 00		500 00
Still River Bridge, Byng Inlet	918 60		918 60
Kearney Bridge	5,615 80	1,183 02	6,798 82
Himsworth Bridges	806 29		806 29
Mississippi, Grant, McKenzie and Egan Bridges	2,125 26		2,125 26
Minden Bridge	3,452 45	1,288 23	4,740 68
*Gooderham and Kinmount Bridges	3,437 17	439 62	3,876 79
Otter Creek Bridge at Copp's Falls	426 32		426 32
Embankment along River in Dover Township	500 00		500 00

STATEMENT No. 2.—*Continued.*

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907.	Expenditure, 1908.	Total expenditure to 31st Dec., 1808.
PUBLIC WORKS.—*Continued.*	$ c.	$ c.	$ c.
Bracebridge Bridge	7,000 00		7,000 00
Bridge over Portage Bay, Keewatin	5,009 50		5,009 50
Martland Township Bridge	201 50		201 50
Bridge at Raysville, Townships McLean and Ridout	900 00		900 00
Maskinonge Creek, Township of Cassimer, removing obstructions	499 92		499 92
South River and Eagle Lake Bridges, Township of Machar	1,295 87		1,295 87
McCarthy Creek Bridges, Township of Gibbons.	300 00		300 00
Powassan Bridge	300 00		300 00
Payne River Bridge, Township of Finch	2,500 00		2,500 00
Berriedale Bridge, Township of Armour	935 77		935 77
Hoodstown Road Bridge, Township of Chaffey..	1,200 00		1,200 00
Hoodstown Road Bridge, over Big East River...	800 00		800 00
Big East River Bridge		3,997 93	3,997 93
Maple Island Bridge, Magnetawan River Township of McKenzie	993 32		993 32
Sleeman's Bridge and approaches	1,044 80		1,044 80
Goulais River Bridge	7,183 26	265 25	7,448 51
Sauble River Bridge, Massey	11,561 62	1,146 58	12,708 20
Spanish River Bridge and approaches, Webbwood	16,924 33	1,440 40	18,364 73
Massey Bridge, Spanish River	13,985 45	13,998 53	27,983 98
Vermillion River Bridge, Township of Hanmer..	662 75		662 75
North Road Bridge, Township of Dymond	1,887 24		1,887 24
Whitestone Bridge, McKenzie Township	1,395 22		1,395 22
Manitowaba Bridge, McKellar Township	798 51		798 51
Bala Bridge	5,252 36		5,252 38
Canard River Bridge	1,000 00		1,000 00
La Mable Bridge, Dungannon Township	1,271 43		1,271 43
Beaver Creek Bridge, Monk Township	996 77		996 77
Black Duck and Indian River Bridges	869 48		869 48
Axe Creek, Housey's Outlet and Kahshee Bridges	1,221 57		1,221 57
Katrine Bridge, Armour Township	1,257 23		1,257 23
Burnt River Bridge, Township of Snowdon	2,017 11		2,017 11
Burnt River Bridge (Township Somerville Bridges)		4,496 26	4,496 26
Rainy River Bridge	1,996 77		1,996 77
Indian Point Bridge, Manitoulin Island	1,339 96		1,339 96
Beaudette River (to aid in dredging, etc.)	3,000 00		3,000 00
Mississippi River Improvements	4,730 71	900 00	5,630 71
Head River Improvements, Township of Laxton and Cardon	976 82		976 82
Moira River Improvements, Township of Thurlow	2,135 32		2,135 32
Muskrat River Improvements	1,861 98		1,861 98
Payne River Works	4,000 00		4,000 00
Otonabee River Bridge	2,500 00		2,500 00
Trent River Works	2,000 00		2,000 00
Bridge, Township of Cambridge	1,000 00		1,000 00
Indian Point Bridge, Manitou Island	2,596 61		2,596 61
Mississicua River Bridge	4,355 94		4,355 94
Stony Creek Bridge, Ryerson	831 68		831 68
Damage by raising waters, near Rat Portage, Kenora	800 00		800 00
Washago and Gravenhurst Road	32,792 12		32,792 12
Washago Wharf	489 22		489 22
Portage du Fort Bridge, Ottawa River	10,747 99		10,747 99
Des Joachims Rapids, bridges and approaches...	9,937 72		9,937 72
Surveys, Inspections, Arbitrations, Awards, etc.	55,501 40	726 78	56,228 18

STATEMENT No. 2—*Continued.*

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907.	Expenditure for 1908.	Total Expenditure to 31st Dec. 1908.
PUBLIC WORKS—*Continued.*	$ c.	$ c.	$ c.
Deer Lake Works, dam and slide, Township of Anstruther	1,420 17	.....	1,420 17
Nogies Creek Works	2,144 57	.....	2,144 57
Cashmere Dam Middlesex (obstructions)	1,144 19	.....	1,144 19
Eagle Lake Works, to construct dam at outlet	1,173 84	.....	1,173 84
Bass Lake Dam, Township Galway, Peterborough	1,000 00	.....	1,000 00
To remove obstacles from navigable streams	513 02	.....	513 02
Bonnechere River Works	338 50	.....	338 50
Talbot River Works	605 95	.....	605 95
Repairs and maintenance, locks, dams, slides, bridges, etc	226,261 50	14,714 88	240,976 38
Concrete Mixing Machine	950 00	.....	950 00
Maintenance, equipment, instruments, machinery, etc	3,466 66	2,660 50	6,127 16
City of St. Thomas, *re* Toll Road, taken over	3,000 00	.....	3,000 00
Township of London, towards purchase Proof Line Toll Road	3,300 00	366 00	3,666 00
Clear Creek Bridge, Oxford Township	.....	500 00	500 00
Beeline Bridge, Alice Township	.....	499 63	499 63
Sherbineau Bridge, Hungerford	.....	500 00	500 00
Round Lake Bridge, Hagarty	.....	500 00	500 00
Slate River Bridge, Kaministiquia River	.....	580 14	580 14
Shadow River Bridge, Township Humphrey	.....	490 90	490 00
Filiatrault Bridge, boundary between Martland and Cosby	.....	699 99	699 99
White Stone Lake Bridge, Parry Sound District	.....	706 40	706 40
Ardoch Bridge, County Frontenac	.....	900 00	900 00
Culls Barry Bay Bridges and Calabogie Bridge	.....	931 48	931 48
Bushkong Lake Bridge, Peterson Road	.....	957 76	957 76
Steidtler Creek Bridge, Parry Sound District	.....	954 47	954 57
Bonnechere River Bridge	.....	1,000 00	1,000 00
Bridge on Town line, between Dymond and Harris	.....	911 28	911 28
Removing obstructions, Black Creek, Townships Monck and Watt	.....	1,480 76	1,480 76
Norland Bridge, Cameron Road	.....	1,354 70	1,354 70
Mud Creek Bridge, Township of Herschell	.....	1,800 00	1,800 00
Veuve River Bridge, Township Kirkpatrick	.....	541 06	541 06
Lake St. John and Sucker Creek. Improving outlet	.....	1,795 56	1,795 56
Hope Township, Towards purchase of Toll Road	.....	2,300 00	2,300 00
Pautois' Creek Bridge, Calvin	.....	2,373 82	2,373 82
Burk's Falls Bridge, Magnetewan River	.....	2,606 14	2,606 14
Englehart Bridge and approaches	.....	2,795 39	2,795 39
Oakley Bridge, Muskoka	.....	3,240 03	3,240 03
Pine River Bridge, Rainy River District	.....	3,241 30	3,241 30
Palmer's Rapids Bridge, Renfrew	.....	3,908 71	3,908 71
Hilliardton Bridge over White River	.....	5,460 89	5,460 89
Dorset Bridge, Township Dorset	.....	6,315 79	6,315 79
Reflooring Iron Bridge over Mississauga River	.....	462 60	462 60
Stephenson Float Bridge	.....	808 15	808 15
Bell's Rapids Bridge, County Renfrew	.....	1,509 38	1,509 38
Dawson Road Bridges	.....	1,480 36	1,480 36
York Branch River Bridge, Township Dungannon	.....	1,194 31	1,194 31
Bridge across Hudson Creek, Township of Kearns	.....	1,792 94	1,792 94
To pay for stock injured by blasting at North River	.....	135 00	135 00
Gratuity to Arthur Brown, injured at Tomstown Bridge	.....	140 00	140 00

STATEMENT No. 2—*Continued.*

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907	Expenditure for 1908.	Total Expenditure to 31st Dec., 1908.
DRAINAGE WORKS—	$ c.	$ c.	$ c.
Tilbury East outlet Drain	3,020 00		3,020 00
Beaver Creek Drain, Cornwall Township	750 00		750 00
Pelee Island Drainage, 63 Victoria, chapter viii.	1,500 00		1,500 00
Miscellaneous Drainage	27 00		27 00
Drainage Works, Township of Elma	4,000 00		4,000 00
Big Creek Drain, Townships West and North Tilbury	8,367 30		8,367 30
Outlet Drain, Eastern Township	2,480 00		2,480 00
Petite Castor River and Annabel Creek, Drainage Works, Township Winchester	7,700 00		7,700 00
Becquithe Creek Drain, Cumberland and Clarence Townships	1,000 00		1,000 00
Kenyon, Charlottenburg, Cornwall and Roxborough Townships	700 00		700 00
Monkland's Drainage Scheme, Roxborough Township	1,200 00		1,200 00
Nesbit and Rogers Drains, Township Bosanquet.	300 00		300 00
Mud Lake Drainage, Township Keppell	963 23		963 23
Fraser Creek Drainage, Township Roxborough	300 00		300 00
Outlet for Durham Creek, Township Brooke	1,300 00		1,300 00
North Branch Drainage Works, Townships Roxborough and Cornwall	2,000 00		2,000 00
Pottawatomie River Drainage Works, Township Derby	3,500 00		3,500 00
Douro Drainage Works, Township Douro	1,200 00		1,200 00
Ruscomb Drainage Works, Township Rochester	3,000 00		3,000 00
Forbes Drainage Works, Township East Tilbury	2,000 00		2,000 00
Snake River, Towship Bromley	7,700 00		7,700 00
Lalonde Drainage Works	900 00		900 00
Silver Creek and Castor River Works, Townships Mountain, Osgoode, South Gower and Winchester	2,400 00		2,400 00
Long Swamp Drainage Works (or Davidson), Township of Keppell	1,500 00		1,500 00
McGregor Creek Works, Township of Howard	2,000 00		2,000 00
McIntyre Creek	1,200 00		1,200 00
Medonte Township	1,800 00		1,800 00
Barkley Creek, Winchester Township	1,000 00		1,000 00
Silver Creek and Castor River	1,600 00		1,600 00
Allan Arcand	2,200 00		2,200 00
Castor Extension and 8th Concession	1,600 00		1,600 00
Millar Drain, Township of Mountain	220 00		220 00
Baldwin Drain, Township of Mountain	290 00		290 00
Big Creek	1,000 00		1,000 00
Bromley Township	100 00		100 00
Dauphin Works	3,000 00		3,000 00
Cavan Township Drainage Works	2,000 00		2,000 00
Whitebread Drainage Works, Township of Sombra	4,000 00		4,000 00
Pelee Drainage Works, Township of Mersea	5,000 00		5,000 00
Bromley Township Drainage Scheme		1,000 00	1,000 00
McIntyre Creek Drainage Works, Drummond Township		1,000 00	1,000 00
Merrick Creek Drainage Works, Township South Sandwich		1,000 00	1,000 00
Dawn and Enniskillen Town Line Drain		1,500 00	1,500 00
Pike Drainage Works, Township Tilbury East		2,000 00	2,000 00
Dauphin Drainage Works, Township Raleigh		2,000 00	2,000 00
Aux Raisin Drainage Scheme		4,000 00	4,000 00
Cavan Township Drainage Works		2,000 00	2,000 00
Ruscombe Drainage Works, Township Rochester		2,000 00	2,000 00

STATEMENT No. 2—*Concluded.*

Name of Work.	Expenditure 1st July, 1867, to 31st Dec., 1907.	Expenditure for 1908.	Total Expenditure to 31st Dec., 1908.
DRAINAGE WORKS—*Continued.*	$ c.	$ c.	$ c.
Logan North West Drain, Township Logan	.....	500 00	500 00
Hardy Creek Drainage Works, Township Adelaide	.....	1,500 00	1,500 00
Survey and Drainage Swamp Lands (Prov. Acct.)	36,600 51	.....	36,600 51
Sundry Drainage Works (charged to municipalities)	329,980 93	.....	329,980 93
Temiskaming Railway Surveys	24,823 58	.....	24,823 58
Roads, Township Ryerson	7,295 06	.....	7,295 06
Clearing and Log Houses on free land grants—Settlers' Homestead Fund	16,780 75	.....	16,780 75
Colonization and Mining Roads	4,808,867 07	460,227 73	5,269,094 80
Aid to Railways	7,852,755 05	140,360 68	7,993,115 73
NOTE :—			
Certificates issued to Railways $9,785,818 05			
Cash paid direct to Railways 1,838,362 42			
Aid granted 2,478 116/160 miles 11,624,180 47			
Certificates outstanding 3,631,064 74			
Actual cash expended to 31st Dec., 1908 $7,993,115 73			
TOTALS	26,544,697 18	1,341,680 48	27,886,377 66

J. P. EDWARDS,
Accountant

Department of Public Works, Ontario.
Toronto, February, 1909.

STATEMENT No. 3.

Being a classified statement showing the Expenditure on Capital Account for Public Buildings, Public Works, Roads, Railways, etc. (1) The total expenditure for thirty-seven years and six months, from the 1st of July, 1867 to the 31st of December, 1904; (2) The total expenditure for four years, from the 1st of January, 1905, to the 31st December, 1908, and (3) The grand total expenditure from the 1st of July, 1867, to the 31st December, 1908.

Name of Work.	Expenditure 1st July, 1867, to 31st December, 1904.	Expenditure 1st Jan., 1905 to 31st December, 1908.	Total Expenditure to 31st December 1908.
	$ c.	$ c.	$ c.
1. Hospitals for the Insane, etc., at Toronto, Mimico, London, Hamilton, Kingston, Brockville, Orillia, Cobourg, Penetanguishene and Woodstock	4,774,584 48	563,140 40	5,337,724 88
2. Penal Institutions, viz., Reformatory for Females, Reformatory for Boys and Central Prison	1,356,979 02	48,369 61	1,405,348 63
3. Educational Institutions, viz., Institution for Deaf and Dumb, Belleville, Institution for the Blind, Brantford, School of Practical Science, Normal and Model Schools, at Toronto and Ottawa, and Normal Schools at London, Stratford, Hamilton, Peterborough and North Bay	1,791,329 68	569,179 86	2,360,509 54
4. Agricultural Institutions, viz., Agricultural College, Guelph; Dairy Schools, Kingston and Strathroy; Dairy Farm, Algoma, and Farm, Mimico	709,257 51	195,374 27	904,631 78
5. Buildings for Administration of Justice, being Osgoode Hall, and Court Houses, Lockups, etc., in the Districts of Algoma, Thunder Bay, Muskoka, Parry Sound, Nipissing, Manitoulin, Sudbury and Rainy River	459,938 26	204,609 99	664,548 25
6. Parliament and Departmental Buildings, and Government House	1,776,474 75	6,285 75	1,782,760 50
7. Works for the improvement of Navigation, such as locks, dams, slides, etc.	1,010,493 50	45,174 87	1,055,668 37
8. Works for the improvement of Transportation, such as bridges, piers, roads, etc.	204,033 68	376,445 08	580,478 76
9. Drainage Works, Expenditures and Advances to Municipalities	418,161 85	53,310 00	471,471 85
10. Miscellaneous Expenditure, viz., Brock's Monument, Niagara River Fence, Clearing of Log Houses, Township of Ryerson, Temiskaming Surveys, and Immigration Lodging House	54,590 07	6,434 50	61,024 57
11. Colonization and Mining Roads	4,059,464 44	1,209,630 36	5,269,094 80
12. Aid to Railways (actual cash expended)	7,456,173 01	536,942 72	7,993,115 73
Grand Total	24,071,480 25	3,814,897 41	27,886,377 66

J. P. EDWARDS,
Accountant.

Department of Public Works, Ontario.
Toronto, February, 1909.

STATEMENT No. 4.

Statement of Contracts entered into with His Majesty in 1908.

Date.	Service.	Subject of Contract.	Contractor.	Sureties.	Description.	Amount.
						$ c.
January 10..	Parliament Buildings, Toronto.	Installation of electric wiring, motor lighting mains and lighting.	The James Morrison Brass Manufacturing Company, Limited, of the City of Toronto.	W. Limberg Symons and Frank Henry McCausland, both of the City of Toronto.	.....	10,250 00
February 27.	Hygienic Building, London.	The erection of an Hygienic Building in the City of London.	Jones Brothers of the City of London.	H. J. Jones and John Whittaker, both of the City of London.	.....	33,500 00
March 6....	Nipissing District (Temiskaming.)	Erection of a timber bridge across the White River at Hilliardton.	Clement A. Foster of the Town of Haileybury.	Arthur James Murphy and Hedley Seymour Hennessy, both of the Town of Haileybury.	.....	4,400 00
March 6....	Nipissing District (Temiskaming.)	Erection of a timber bridge across the White River at Englehart.	William Pollock & Sons of the Town of Englehart.	John Pollock and William Pollock, both of the Town of Englehart.	....	2,400 00
March 26...	Thunder Bay District....	Installation of Plumbing work and hot water heating in Registry Office, Port Arthur.	The Barnes Hardware Company, Limited, of Port Arthur.	.....	....	760 00
March 26...	Algoma District.....	Installation of Plumbing work and hot water heating in Registry Office, Sault Ste. Marie.	George Woolrich of the Town of Sault Ste. Marie.	.....	....	576 50
March 26...	Osgoode Hall, Toronto ..	The erection of an addition to the West Wing.	Thomas V. Gearing and Company of the City of Toronto.	Edward Gearing and Charles B. Williams, both of the City of Toronto.	.....	34,853 00

STATEMENT No. 4.—*Continued.*

Statement of Contracts entered into with His Majesty in 1908.

Date.	Service.	Subject of Contract.	Contractor.	Sureties.	Description.	Amount.
March 30...	Rainy River District.....	Erection of pile trestle bridges over Pine River:—Blackhall bridge, Richardson bridge, Township of Dilke bridge, Nelles township, South bridge, Nelles township, North bridge, Wellington township, bridges, (3).	William Henry Loughead of the Village of Emo.	Alexander Luttrell and William Rose, both of the Village of Emo.	.....	$3,535 00
April 25	Parliament Buildings, Toronto.	Re-wiring and altering electric light fixtures.	The James Morrison Brass Manufacturing Company, Limited, of the City of Toronto.	.....	.....	2,000 00
May 7.....	Mud Creek Bridge	Erection of a pile trestle bridge over Mud Creek, Township of Herschell, County of Hastings.	William Mulcahey of the Village of Baptiste.	.....	.....	1,800 00
May 14.....	Kingston Hospital for Insane.	Supply and installation of four (4) Jones Underfeed Automatic Stokers.	Jones Underfeed Stoker Company, Limited, of the City of Toronto.	.....	.....	3,360 00
May 14.....	London Hospital for the Insane.	Supply and installation of three (3) Jones Underfeed Automatic Stokers.	Jones Underfeed Stoker Company, Limited, of the City of Toronto.	.....	.....	2,520 00
May 14.....	Mimico Hospital for the Insane.	Supply and installation of two (2) Jones Underfeed Automatic Stokers.	Jones Underfeed Stoker Company, Limited, of the City of Toronto.	.....	.....	1,680 00
June 10.....	Osgoode Hall, Toronto ..	For the supply and setting up of two horizontal Multi-tubular boilers.	The A. R. Williams Machinery Company, Limited, of Toronto.	Walter H. Clemes and Frank P. McCurdy, both of the City of Toronto.	.....	1,900 00

June 10.....	London Normal School.	Construction of a ventilating plant.	Messrs. Noble and Rich of the City of London.	W. A. Wilson and J. A. Tancock, both of the City of London.	.....	6,597 00
June 12.....	London Normal School.	Supply of Coal and Wood for the season 1908-9.	William Buchanan of the City of London.	T. W. McFarland and N. P. Graydon, both of the City of London.	Large egg coal, per ton	6 70
					Pine slabs, per cord	5 50
June 12.....	Perterborough Normal School.	Supply of Coal and pine Wood for the season 1908-9.	The Ontario Coal Company, Limited, of the City of Peterborough.	Gerald K. Rackham and Cyril Currie, both of the City of Peterborough.	Large egg coal, per ton	7 00
					Pine slabs, per cord	3 00
June 17.....	Thunder Bay District....	Alterations to Gaol at Port Arthur.	John Maunder of the City of Port Arthur.	Frank H. Keefer and Donald Hogarth, both of Port Arthur.	.....	2,792 75
June 17.....	Fruit Experimental Station near Jordan Harbour.	For the erection of an Administration Building and a residence for the Superintendent and students.	Newman Brothers of the City of St. Catharines.	J. A. Grobb and Samuel P. Gourlay, both of St. Catharines.	.....	10,300 00
						5,400 00
						15,700 00
June 18.....	Normal School, Hamilton.	Supply of Coal and Wood for the season 1908-9.	Thomas Myles Sons', Limited, of the City of Hamilton.	Thomas Ramsay and Thomas F. McIlwaith, both of Hamilton.	Large egg coal, per ton.....	5 85
					Pine slabs, per cord	3 75
June 18.....	Brantford Institution for the Blind.	Supply of Coal for the season 1908-9.	Frederick Henry Walsh of the City of Brantford.	R. Gowman and Robert E. Ryerson, both of Brantford.	Egg, stove and nut size, per ton	6 50
					Soft coal, per ton..	4 85
June 18	Belleville Institution for the Deaf and Dumb.	For the supply of coal and wood for the season of 1908-9.	Nathaniel Allen of the City of Belleville.	Thomas Stewart and John McKeown, both of Belleville.	Hard grate, per ton	5 90
					" egg, "	6 15
					" nut, "	6 70
					Hardwood per cord	6 90
June 18	Provinc'l Board of Health —Sewage and Water Investigations.	Supply and placing of cypress tanks in the Experimental Building on Clifford Street, Toronto.	Rutherford Cumming of the City of Toronto.	.....	.....	2,780 00
June 18	Normal School, Stratford	Supply of coal and wood for the season 1908-9.	Charles J. Stewart of the City of Stratford.	Felix Devlin and C. J. McIlthargey, both of Stratford.	Large egg coal, per ton	5 89
					Pine slabs, per cord	4 50

STATEMENT No. 4.—*Continued.*

Statement of Contracts and Bonds entered into with His Majesty in 1908.

Date.	Service.	Subject of Contract.	Contractor.	Sureties.	Description of Contract.	Amount.
June 22	Ottawa Normal and Model Schools,	Supply of coal and wood for the season 1908-9.	William Dowler Morris, of the City of Ottawa.	Frederick F. Morris and George Code, both of Ottawa.	Egg and stove coal per ton..... Hardwood per cord Pine " "	$ c. 7 10 6 49 3 49
June 22	Osgoode Hall, Toronto, Normal and Model Schools and Government House.	Supply of coal and wood for the season 1908-9.	P. Burns & Company, of the City of Toronto.	George D. McDonald and Edward A. Burns, both of Toronto.	Hard grate and egg per ton ..... Hard stove per ton. Soft coal " Cannell " Hardwood per cord Pine " " Pine slabs "	6 25 6 40 6 25 7 10 7 00 6 50 4 75
June 22	Parliament Buildings, Toronto, and Government House.	Supply of coal and wood for the season 1908-9.	The Standard Fuel Company, Limited, of the City of Toronto.	Charles Logan and George Vick, both of Toronto.	Pea coal per ton Stove and nut " Hardwood per cord Pine " "	5 40 6 38 7 50 7 00
June 26	Magnetawan River Bridge Burk's Falls.	Supply and erection of steel superstructure for a bridge over the south branch of the river.	The Jenks-Dresser Company, Limited, of the Town of Sarnia.	.....	.....	1,395 00
June 26	Big East River Bridge, District of Muskoka.	Supply and erection of steel superstructure of bridge over the Big East River, Township of Chaffey.	The Hamilton Bridge Works Company, Limited, of the City of Hamilton.	.....	.....	2,160 00
June 26	Palmer's Rapids Bridge..	Supply and erection of steel superstructure of bridge over Madawaska River at Palmer's Rapids, County of Renfrew.	The Hamilton Bridge Works Company, Limited, of the City of Hamilton.	.....	.....	2,710 00

June 26	Oakley Bridge, in the District of Muskoka.	Supply and erection of steel superstructure of bridge over the south branch of the Muskoka River on the Townline between the Townships of Oakley and McLean.	The Hamilton Bridge Works Company, Limited, of the City of Hamilton.	....	.....	2,100 00
June 27	Ontario Agricultural College, Guelph.	For the erection of a fruit house.	The H. A. Clemens Company, Limited, of the City of Guelph.	.....	.....	3,023 00
June 27	Ontario Agricultural College, Guelph.	Alterations and additions to the boiler house.	The H. A. Clemens Company, Limited, of the City of Guelph.	.....	.....	3,993 00
July 3.....	Fruit Experimental Station, near Jordan Harbour.	Erection of building for cold storage and installation of Eureka Cold Dry Air System.	The Eureka Refrigerator Company, Limited, of the City of Toronto.	.....	.....	1,500 00
July 7.....	Equipment of New Normal Schools.	Seats, desks, etc., for the Normal Schools at Stratford, Hamilton and Peterborough.	The Globe Furniture Company, Limited, of Walkerville.	.....	.....	3,714 60
July 9.....	New Normal Schools, equipment of.	Supply and fitting up of lockers at the Normal Schools at Stratford, Hamilton and Peterborough.	The H. A. Clemens Company, Limited, of the City of Guelph.	.....	$721.00 each.....	2,163 00
July 9.....	New Normal Schools, equipment of.	Providing and setting up in place stools, cupboards, platforms, drawing tables, etc., in the Normal Schools at Stratford, Hamilton and Peterborough.	The Berlin Interior Hardwood Company, Limited, of the Town of Berlin.	.....	.....	2,763 60
July 9	New Normal Schools, equipment of.	Providing and setting in place tables, shelving, cupboards, etc., at the Normal Schools at Stratford, Hamilton and Peterborough.	Toronto Waterloo Office Fixture Company, Limited, of the City of Toronto.	.....	....	1,755 00

STATEMENT No. 4.—*Continued.*

Statement of Contracts and Bonds entered into with His Majesty in 1908.

						$ c.
July 15.....	Ontario Agricultural College, Guelph.	Supply and setting up of two horizontal multi-tubular boilers.	The Goldie and McCulloch Company, Limited, of the Town of Galt.	.....	.....	2,583 00
July 23.....	Brantford Institution for the Blind.	Erection of a carpenter shop and broom shop.	James S. Wright, of the City of Brantford.	John H. Spence and James Workman, both of the City of Brantford	.....	5,790 00
July 25.....	Ottawa Normal School...	Installation of a ventilating system and plant.	McKinley & Northwood, of the City of Ottawa.	.....	.....	5,315 00
July 28.....	Ottawa Normal School...	For sundry alterations to the buildings.	William G. Adamson, of the City of Ottawa.	.....	.....	2,887 00
August 5....	Removing obstructions from Mississippi River.	Deepening of the channel through Munroe's Rapids, in the Mississippi River, Township of Ramsay.	George A. Burgess, of the Town of Carleton Place.	.....	Per cubic yard	60
August 19...	New Normal Schools, equipment of.	Delivering and setting up tables, platforms, cupboards, etc., at the Normal Schools at Stratford, Hamilton and Peterborough.	The Berlin Interior Hardwood Company, Limited, of the Town of Berlin.	.....	.....	1,491 00
August 21...	Ontario Agricultural College, Guelph.	For the erection of an incubator house.	George A. Scroggie, of the City of Guelph.	Robert D. Stewart and Henry Benallick, both of Guelph.	.....	2,956 00
August 21...	Ontario Agricultural College, Guelph.	For the erection of a double cottage for gardener and teamster.	George A. Scroggie, of the City of Guelph.	Robert D. Stewart and Henry Benallick, both of Guelph.	.....	3,089 00
August 21...	Normal School, Peterborough.	Filling and grading around the outside of school building at Peterborough.	T. E. Wade and John E. Hayes, of the City of Peterborough.	.....	Per cubic yard	65

August 22..	Normal School, North Bay.	Filling and grading around the outside of Normal School at North Bay.	S. F. Whitham of the City of Brantford.	.....	Per cubic yard	75
August 27...	La Blanche River Bridge, District of Nipissing.	For the erection of a timber Bridge across the La Blanche River at Pearson's crossing in the Township of Casey.	Sinclair and Smith of the Town of New Liskeard.	William J. Blair and Francis L. Smiley, both of New Liskeard.	.....	4,916 40
August 28...	Osgoode Hall, Toronto.	The steam heating and plumbing work in the new addition to the west wing.	The Bennett and Wright Company, Limited, of the City of Toronto.	George Chapperton and Joseph O'Leary, both of Toronto.	.....	2,396 00
September 1	Ottawa Normal School.	For the plumbing work in connection with the new lavatory in basement.	McKinley and Northwood of the City of Ottawa.	.....	....	897 00
September 2	Parry Sound District.	For the plumbing work and installation of hot water heating in the Registry Office at Parry Sound.	The William Beatty Company, Limited, of the Town of Parry Sound.	.....	.....	698 00
September 2	Parry Sound District.	Installing of a hot water heating apparatus in the Gaol at Parry Sound.	The Fred. Armstrong Company, Limited, of the City of Toronto.	.....	....	989 00
Septemb'r 10	Pautois Bridge, District of Nipissing.	Supply and erection of the steel superstructure of a Bridge over Pautois Creek in the Township of Calvin.	The Hamilton Bridge Works Company, Limited, of the City of Hamilton.	.....	....	480 00
Septemb'r 10	York Branch Bridge, County of Hastings.	Supply and erection of the steel superstructure of a Bridge over the York Branch River, Township of Dungannon.	The Dickson Bridge Works Company, Limited, of the Town of Campbellford.	.....	.....	946 00
Septemb'r 16	Hudson Creek Bridge, District of Nipissing.	The supply and erection of the steel superstructure of a Bridge over Hudson Creek in the Township of Kearns.	Ontario Bridge Company of the City of Toronto.	.....	.....	1,498 00

STATEMENT No. 4—*Continued.*

Statement of Contracts and Bonds entered into with His Majesty in 1907.

Date.	Service.	Subject of Contract.	Contractor.	Sureties.	Description.	Amount.
						$ c.
Septemb'r 17	Dorset Bridge, Districts of Muskoka and Haliburton.	The supply and erection of the steel superstructure of a Bridge over the Burnt River in the Village of Dorset.	Western Bridge and Equipment Company of the City of Chatham.	.....	.....	3,480 00
Septemb'r 17	Somerville Bridges, (Burnt River Bridge).	The supply and erection of the steel superstructure of a Bridge over the Burnt River in the Township of Somerville.	Western Bridge and Equipment Company of the City of Chatham.	.....	.....	1,668 96
Septemb'r 18	Sudbury District.	Installing the Heating and ventilating system in the Court House, Registry Office, and Gaol at Sudbury.	The Fred. Armstrong Company, Limited, of the City of Toronto.	William Armstrong and James R. Bailey, both of Toronto.	.....	4,500 00
Septemb'r 28	Sudbury District.	Electric wiring of the Court House and of the Registry Office at Sudbury.	The Fred. Armstrong Company, Limited, of the City of Toronto.	William Armstrong and James R. Bailey, both of Toronto.	.....	900 00
October 7...	Elk Lake Bridge, Nipissing District.	The erection of a Bridge across Bear River.	W. H. Stuart of Elk Lake.	A. J. Stuart and A. Jacques, both of Powassan.	.....	645 00
October 7...	Fruit Experimental Station near Jordan Harbour.	The erection of a double cottage for Teamsters.	L. R. Fretz of Vineland.	D. G. Fretz of Vineland, and William Fretz of Jordan Harbor.	.....	2,777 00
October 16..	Belleville Institution for the Deaf and Dumb.	Hot water heating system to be installed in the greenhouse.	John Lewis and Company, of the City of Belleville.	.....	.....	900 00
October 28..	Sudbury District.	Installing plumbing works in the Registry Office and in the Court House at Sudbury.	Purdy, Mansell, Limited, of the City of Toronto.	Fred. J. Lucas and Lewis R. Fox, both of the City of Toronto.	.....	1,739 00

October 29..	Rainy River District.	Installation of a plumbing and of a hot water heating system in the new Gaol at Fort Francis.	East and Corrin of Fort Francis.	.....	.....	1,250 00
November 2	Additional Normal Schools.	Supply and fixing in position of electric light fixtures at Stratford, Hamilton and Peterborough.	Electric Wiring, Fixture and Supply Company of the City of Toronto.	Walter Warren and the R. J. Lovell Company, Limited, both of the City of Toronto.	.....	1,766 85
November 4	Fruit Experimental Station, near Jordan Harbor.	Plumbing and gas fitting in the Administration Building, and steam heating in the Administration Building and greenhouse.	The Keith and Fitzsimons Company, Limited, of the City of Toronto.	Wilmot Fitzsimons and Thomas D. Kerr, both of the City of Toronto.	.....	1,395 00
November 5	Sudbury District.	Filling and grading of grounds around the Court House and Registry Office, Sudbury.	R. H. Carmichael of the Town of Sudbury.	....	Per cubic yard....	75
December 5.	Brantford Institution for the Blind.	Installing of the plumbing works and of the steam heating in connection with the carpenter and broom shop.	T. J. Minnes and Company of the City of Brantford.	George H. McCann and Robert E. Ryerson, both of the City of Brantford.	.....	991 00
December 18	Hygienic Institute Building, London.	The heating and ventilating system and the plumbing works.	Noble and Rich of the City of London.	W. A. Wilson and J. A. Tancock, both of the City of London.	.....	9,700 00

Department of Public Works, Ontario.
Toronto, February, 1909.

J. P. EDWARDS,
Accountant and Law Clerk.

REPORT

Relating to the Registration of

Births, Marriages and Deaths

IN THE

Province of Ontario

FOR THE

YEAR ENDING 31st DECEMBER,

1907

(Being the 38th Annual Report.)

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO

Printed and Published by L. K. CAMERON, Printer to the King's Most Excellent Majesty

1909

WARWICK BRO'S & RUTTER, Limited, Printers,
TORONTO.

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To His Honour J. MORISON GIBSON,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I herewith beg to present for your consideration the Thirty-eighth Annual Report of the Registrar-General, relating to the Registration of Births Marriages and Deaths in the Province of Ontario, during the year 1907.

Respectfully submitted,

W. J. HANNA,

Registrar-General of Ontario.

SIR,—I have the honour to submit for your approval, the Thirty-eighth Annual Report made in conformity with and under the provisions of The Act respecting the Registration of Births, Marriages and Deaths in the Province of Ontario, for the year ending December the thirty-first, 1907.

I have the honour to be,

Sir,

Your obedient servant,

CHAS. A. HODGETTS, M.D.,

Deputy Registrar-General.

To HON. W. J. HANNA,
Registrar-General of Ontario.

Report Upon

Births, Marriages and Deaths

For the Year 1907.

The following is the resume of the Vital statistics for the official and calendar year, ending December 31st, 1907.

The Report is the Thirty-Eighth Annual Report of the Registrar-General, and comprises the following returns;

Births, 53,584, Marriages, 21,915, and Deaths, 33,502, being a total of 109,001 registrations, as against 104,340 for the preceding year. The increase in each of the three groups over those of the year 1906, being, Births, 1,874, Marriages, 2,067, Deaths, 720.

The following counties or districts show a decrease in the total returns as compared with the previous year (1906):—Dufferin, Haldimand, Halton, Kent, Lambton, Lanark, Lincoln, Muskoka, Ontario, Parry Sound, Peel, Perth, Peterborough, Renfrew, Simcoe and Wellington.

Estimated Population.

The estimated population of the province for the year as based upon the increase between the returns of the Dominion Census Bureau for the years 1891 and 1901, and figured out on geometrical progression, is 2,220,430, which is an increase of 6,314 over the year 1906. It must, however, be noted that in some instances, particularly where the county includes in its area one or other of the large cities, that the ratio given must be markedly in error. In some cases the increase of population has been phenomenal, and the correction of errors cannot be made with any degree of accuracy or uniformity, until after the next decennial census in 1911.

The estimated population by Counties and Districts, is given in table 1—while estimated population of the cities and towns of over four thousand of a population, are given in Tables 2 and 3.

Births.

The total number of births reported during 1907, was the highest of any year yet recorded, a comparison of returns for the ten preceding years is made in Table 4, where the births are given by counties and districts, with the birth rate per 1000 of estimated population with the one exception, that the birth rate for the year 1901, is based upon the Dominion Census and Statistics Office Bureau Returns for the decennial Census taken in that year.

Of the 53,584 births registered in the province during the year, 15,269, or 28.4 per cent occurred in the eighteen cities of the province, which are credited with an estimated population of 548,810 which places the rate per thousand, at 27.9 for the City group, while for the fifteen towns, with an estimated population of 122.064, the total number registered was 3,097, or 55 per cent of the total for the province, and the birth rate in this group of municipalities, was 25.3 per thousand of the estimated population.

The similar extraordinary high birth rate in the cities of Fort William and Port Arthur, is in the main due to the fact that the estimated population does not at all approximate the actual population; both cities having very materially increased in population during the past few years, and the same statement in the main holds good in respect to the City of Niagara Falls, while the seemingly high birth rate of the City of Toronto, would be considerably lowered, were the population figures as given by the Police census used as a basis.

The lowest birth rates are those of Dufferin, 15.8, Prescott and Russell, 16.0 and Lennox and Addington, 17. per thousand.

The sex distribution by months, will be seen by reference to page ii.

The total number of male births was 27,506, and that of female births, 26,078, or, 105.4 males to 100 females born during the year 1907. The maximum number of births registered during the year, was in the month of March.

To permit of ready comparison of the births registered by counties for the past ten years, Table 4 is given. The upper line in each case being the total number registered, and the lower, the rate per thousand of the estimated population. In the column "Total" appears on the upper line, the number of births registered during the decade, and in the lower line, the average rate per thousand of population.

The number of multiple births registered, are 1,186, of which number 1,162 were twins, and 24 triplets. Of the twins, 563 were males, and 599 females. The Triplets being divided as follows: males 10, females 14.

The following figures show the number of illigitimates registered during the past 10 years, with the ratio per thousand of all births registered.

Year.	Number.	Ratio per 1000.	Year.	Number.	Ratio per 1000.
1898	678	14.5	1903	782	16.0
1899	808	17.8	1904	798	15.8
1900	800	17.3	1905	699	13.4
1901	812	17.6	1906	885	16.1
1902	819	17.1	1907	760	14.1
			Total	7,841	15.9

Marriages.

There were registered during the year, 21,915 marriages, an increase of 2,067 over the preceding year, and as will be seen by reference to Table 5, the figures are the highest registered during the decade Beginning with the year 1898, while the rate per thousand is 1.5 in excess of the average for the decade, and 0.9 in excess of the preceding year.

The extraordinary rates for the County of Essex, for the decade, may be seen by reference to Table 5. No less than 15,842 marriages have been reported

during the ten years. The total this year having passed the 2,000 figure, which gives the rate, based on estimated population, of 36.2 per thousand. This is not, however, a fair method of comparison, as most of the couples married are non-residents of the Province, and hail chiefly from the United States, who reach this Province through the City of Detroit. By comparison with the border Counties of Lambton and Welland, it will be seen that in the former county, which also adjoins the State of Michigan, there is no such abnormal rate; indeed the rate is 1.00 per thousand less than the provincial average.

In the case of Welland County, which adjoins the State of New York, somewhat similar conditions exist, although the business has not assumed such large proportions as the City of Windsor and the County of Essex.

In Welland County 404 marriages were registered, of which number 187 were in the City of Niagara Falls.

The figures for these counties are, Essex 2,168 marriages, of which 1,562 or 73.6 per cent. of the county total were registered in the City of Windsor; Lambton, 509, of which 220, or 43.2 per cent., were registered in Sarnia; Welland, 404, of which 187, or 46.2 per cent., were registered in the City of Niagara Falls.

In conclusion, I would point out that as the marriage law is for the Province of Ontario, and as the ceremony cannot be performed by a clergyman or church official non-resident in Canada, it does appear somewhat anomalous that there is a distinct provision in the Marriage Act which makes it possible for non-residents of Ontario to be married under exactly the same conditions as are imposed upon residents who marry by license, and upon much less difficult terms when the marriage is by banns, where residence of fifteen days is necessary.

The following table shows the numbers of marriages by license and by banns in the Province during the last ten years.

Marriages by License and Banns during 10 years, 1898-1907.

Year.	Licenses.	Banns.	Totals.
1898	13,738	1,637	15,375
1899	14,740	1,774	16,514
1900	15,363	1,744	17,107
1901	15,978	2,057	18,035
1902	16,077	1,995	18,072
1903	17,780	2,050	19,830
1904	17,787	1,992	19,789
1905	18,169	2,257	20,426
1906	17,792	2,054	19,846
1907	19,469	2,446	21,915

The classification by Religious denomination, is as follows:

Methodists, 12,942; Presbyterians, 8,732; Church of England, 8,400; Roman Catholics, 6,926; Baptists, 2,696; Lutherans, 1,322; Congregationalists, 422; Hebrews, 332; Evangelical Association, 285; Salvation Army, 167; Other Denominations, 1,041; No Denomination, 565. Total, 43,830.

Deaths.

There were registered in the year 1907, 33,502 deaths from all causes, which is a death rate of 15.0 per each thousand of the estimated population; both the numbers and the death rate exceed that of any previous year, and the death rate is 1.6 per thousand in excess of the average for the decade.

The tables referring to this class are Nos. 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15.

The tables relating exclusively to mortality statistics are as follows:

Table 6.—Total deaths and death rate per 1,000 of population of counties for ten years, 1898 to 1907, inclusive.

Table 7.—Recapitulation of deaths by groups of diseases, by counties, by age groups, sex and months.

Table 8.—Recapitulation of deaths by groups of diseases, for cities, by age groups, sex and months.

Table 9.—Recapitulation of deaths by groups of disease, for towns, by age groups, sex and months.

Table 10.—Total deaths by individual diseases, occurring in each county.

Table 11.—Deaths by individual diseases as reported in each city.

Table 12.—Deaths by individual diseases as reported in each town with over 5,000 of population.

Table 13.—Showing infantile mortality of those under 5 years of age, by ages, individual diseases and groups.

Table 14.—Deaths by occupation in the whole province, by age, groups and sex.

Table 15.—Deaths by occupation occurring in cities of Ontario, by age, groups and sex.

Collected Records.

For the information of the public it may be stated that all the births, marriages and deaths registered with Division-Registrars are now in the vaults of the Department; these date from July 1st, 1869, and total over three millions, classified as follows:

Births	1,656,858
Marriages	576,067
Deaths	878,498

while in addition to these there are marriage returns which have been received from the various Registration Districts as they existed before the year 1869, dating back as far, in one instance, to the year 1816.

Changes.

It will be noted that the municipalities of Fort William and Port Arthur appear for the first time in Table 2, amongst the cities, and the list of Town Table 3 has been increased by the addition of Barrie, Collingwood, Hawkesbury, Pembroke and Smith's Falls.

Table Showing Deaths from Tuberculosis, Province of Ontario, 1870-1907.

Year.	Deaths from Tuberculosis.	Decennial Census Population.	Ratio per 1,000 of Population.	Total Deaths from all Causes.	% of all Deaths, from Tuberculosis.
1870.....	886				
1871.....	1,049	1,620,851	.64	6,905	11%
1872.....	1,308				
1873.....	1,420				
1874.....	1,255				
1875.....	No returns.				
1876.....	2,315				
1877.....	2,188				
1878.....	2,053				
1879.....	2,104				
1880.....	2,197				
1881.....	2,446	1,923,610	1.27	22,821	10%
1882.....	2,591				
1883.....	2,667				
1884.....	2,506				
1885.....	2,499				
1886.....	2,573				
1887.....	2,556				
1888.....	2,551				
1889.....	2,417				
1890.....	2,503				
1891.....	2,379	2,122,716	1.12	21,558	11%
1892.....	2,592				
1893.....	2,552				
1894.....	2,379				
1895.....	2,472				
1896.....	2,922				
1897.....	3,164				
1898.....	3,291				
1899.....	3,405				
1900.....	3,484				
1901.....	3,284	2,184,144	1.04	29,608	11%
1902.....	2,694				
1903.....	2,723				
1904.....	2,877				
1905.....	2,667				
1906.....	2,911				
1907.....	2,530				
Total...	87,654				

misprint

APPENDIX.

COMPARISON OF THE ABRIDGED AND DETAILED FORMS OF THE INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH.

The Abridged Classification is that used by the Department in the preparation of certain tables, beginning with the Report for the year 1906; and all reference numbers in parenthesis or brackets are to those of the Detailed Classification and show the exact titles corresponding to titles of the abridged or shorter list.

The Detailed Classification is the International Classification (Bertillon Nomenclature) of cause of death.

Abridged Classification.	Detailed Classification.
ALL CAUSES (STILL BIRTHS INCLUDED.)	ALL CAUSES (STILL BIRTHS EXCLUDED).
I.—General Diseases.	I.—General Diseases.
(*A. Epidemic Diseases.*)	(*A. Epidemic Diseases.*)
1. Typhoid fever (1).	1. Typhoid fever (abdominal typhus).
	2. Exanthematic typhus.
	3. Relapsing fever.
2. Malarial fever (4).	4. Intermittent fever & malarial cachexia.
	4. Repeated. Malarial cachexia.
3. Smallpox (5).	5. Smallpox.
4. Measles (6).	6. Measles.
5. Scarlet Fever (7).	7. Scarlet fever.
6. Whooping Cough (8).	8. Whooping cough.
7. Diphtheria and Croup (9).	9. Diphtheria and croup.
	9. Repeated. Diphtheria.
8. Influenza (10).	10. Influenza.
	11. Miliary fever.
	12. Asiatic cholera.
	13. Cholera nostras.
9. Dysentery (14).	14. Dysentery.
	14. Repeated. Epidemic dysentery.
	15. Bubonic plague.
	16. Yellow fever.
	17. Leprosy.
10. Erysipelas (18).	18. Erysipelas.
11. Other epidemic diseases (2, 3, 11, 15, 16, 17, 19).	19. Other epidemic diseases.
(*B. Other general diseases.*)	(*B. Other general diseases.*)
12. Septicæmia (20).	20. Purulent infection and septicæmia.
	21. Glanders and farcy.
	22. Malignant pustule.
	23. Rabies.
	24. Actinomycosis, trichinosis, etc.
	25. Pellagra.
13. Tuberculosis of lungs (27).	27. Tuberculosis of the lungs.
14. Tuberculosis of larynx (26).	26. Tuberculosis of the larynx.
15. Tuberculous meningitis (28).	28. Tuberculosis of the meninges.
16. Abdominal tuberculosis (29).	29. Abdominal tuberculosis.
17. Pott's Disease (30).	30. Pott's disease.
18. Tuberculous abscess (31).	31. Cold abscess, abscess by congestion.
19. White swelling (32).	32. White swelling.
20. Tuberculosis of other organs (33).	33. Tuberculosis of other organs.
21. General tuberculosis (34).	34. General tuberculosis.
22. Scrofula (35).	35. Scrofula.

FORMS OF THE INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH.—*Continued.*

Abridged Classification.	Detailed Classification.
23. Venereal diseases (36, 37, 38).	36. Syphilis. 37. Gonnorrhœa (5 years and over). 38. Gonnorrhœa (under 5 years).
24. Cancer of mouth (39).	39. Cancer and other malignant tumors of the buccal cavity.
25. Cancer of stomach and liver (40).	40. Cancer and other malignant tumors of the stomach and liver.
26. Cancer of intestines (41).	41. Cancer and other malignant tumors of the peritoneum, intestines & rectum.
27. Cancer of genital organs (42).	42. Cancer and other malignant tumors of the female genital organs.
28. Cancer of breast (43).	43. Cancer and other malignant tumors of the breast.
29. Cancer of skin (44).	44. Cancer and other malignant tumors of the skin.
30. Cancer of other or unspecified organs (45).	45. Cancer and other malignant tumors of other organs or of organs not specified.
31. Tumors (46).	46. Other tumors (tumors of the female genital organs excepted.
32. Rheumatism (47, 48).	47. Acute articular rheumatism. 48. Chronic rheumatism and gout.
33. Diabetes (50).	49. Scurvy. 50. Diabetes.
	51. Exophthalmic goitre. 52. Addison's disease.
34. Anæmia, leukæmia (53, 54).	53. Leukæmia. 54. Anæmia, chlorosis.
35. Alcoholism (56).	56. Acute and chronic alcoholism.
36. Chronic poisonings (57, 58, 59).	57. Chronic lead poisoning. 58. Other chronic poisonings (occupational). 59. Other chronic poisonings.
37. Other general diseases (21, 22, 23, 24, 25, 49, 51, 52, 55).	55. Other general diseases.
II.—DISEASES OF NERVOUS SYSTEM.	II. DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSE.
38. Encephalitis (60).	60. Encephalitis.
39. Meningitis (61).	61. Simple meningitis. *61. Repeated.* (*Epidemic cerebro-spinal meningitis*).
40. Locomotor ataxia (62).	62. Progressive locomotor ataxia.
41. Other diseases of spinal cord (63).	63. Other diseases of the spinal cord.
42. Apoplexy (64).	64. Congestion and hemmorrhage of the brain.
43. Softening of brain (65).	65. Softening of the brain.
44. Paralysis (66).	66. Paralysis without specified cause.
45. General paralysis of insane (67).	67. General paralysis.
46. Other forms of mental disease (68).	68. Other forms of mental alienation.
47. Other diseases of brain (74).	
48. Epilepsy (69).	69. Epilepsy.
49. Convulsions (70, 71).	70. Convulsions (non-puerperal), 5 years and over). 71. Convulsions (under 5 years).
50. Tetanus (72).	72. Tetanus.
51. Other diseases of the nervous system (73, 74, 75, 76).	73. Chorea. 74. Other diseases of the nervous system. 75. Diseases of the eye and its adnexa. 76. Diseases of the ear.

FORMS OF THE INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH.—*Continued.*

Abridged Classification.	Detailed Classification.
III.—DISEASES OF CIRCULATORY SYSTEM.	III.—DISEASES OF THE CIRCULATORY SYSTEM.
52. Pericarditis (77),	77. Pericarditis.
53. Endocarditis (78).	78. Acute endocarditis.
54. Heart disease (79).	79. Organic diseases of the heart.
55. Angina pectoris (80).	80. Angina pectoris.
56. Diseases of arteries (81).	81. Diseases of the arteries, atheroma, aneurism, etc.
57. Embolism and thrombosis (82).	82. Embolism and thrombosis.
58. Diseases of veins (83).	83. Diseases of the veins (varices, hemorrhoids, phlebitis, etc.).
59. Diseases of lymphatics (84).	84. Diseases of the lymphatic system (lymphangitis, etc.)
60. Other diseases of circulatory system (85, 86).	85. Hemorrhages. 86. Other diseases of the circulatory system.
IV.—DISEASES OF RESPIRATORY SYSTEM.	IV.—DISEASES OF THE RESPIRATORY SYSTEM.
61. Diseases of larynx (88).	87. Diseases of the nasal fossæ.
62. Diseases of the thyroid body (89).	88. Diseases of the larynx.
63. Acute bronchitis (90).	89. Diseases of the thyroid body.
64. Chronic bronchitis (91).	90. Acute bronchitis.
65. Broncho-pneumonia (92).	91. Chronic bronchitis.
66. Pneumonia (93).	92. Broncho-pneumonia.
67. Pleurisy (94).	93. Pneumonia.
68. Congestion of lungs (95).	94. Pleurisy.
69. Gangrene of lungs (96).	95. Congestion and apoplexy of the lungs.
70. Asthma and emphysema (97-98).	96. Gangrene of the lungs.
71. Hemorrhage of lungs (99).	97. Asthma. 98. Pulmonary emphysema.
72. Other diseases of respiratory system phthisis excepted (87, 99).	99. Other diseases of the respiratory system (phthisis excepted).
V.—DISEASES OF DIGESTIVE SYSTEM.	V.—DISEASES OF THE DIGESTIVE SYSTEM.
73. Diseases of mouth (100).	100. Diseases of the mouth and its adnexa.
74. Tonsilitis (101)	101. Diseases of the pharynx. 102. Diseases of the œsophagus.
75. Other diseases of pharynx (101, 102).	
76. Ulcer of stomach (103).	103. Ulcer of the stomach.
77. Gastritis. 78. Other diseases of the stomach. (104).	104. Other diseases of the stomach (cancer excepted.)
79. Dentition.	
80. Diarrhœa and enteritis (under 2 years) (105).	105. Diarrhœa and enteritis (under 2 years).
	105. Repeated. Chronic diarrhœa and enteritis (under 2 years).
81. Diarrhœa and enteritis (2 years and over) (106).	106. Diarrhœa and enteritis (2 years and over).
	107. Intestinal parasites.
82. Hernia 83. Obstruction of intestines (108).	108. Hernia and intestinal obstructions.
84. Other diseases of intestines (107, 109).	109. Other diseases of the intestines.
85. Acute yellow atrophy of liver (110).	110. Acute yellow atrophy of the liver.
86. Hydatid tumors of liver (111).	111. Hydatid tumors of the liver.
87. Cirrhosis of liver (112).	112. Cirrhosis of the liver.
88. Biliary calculi (113).	113. Biliary calculi.
89. Other diseases of liver (114).	114. Other diseases of the liver.
90. Diseases of spleen (115).	115. Diseases of the spleen.
91. Peritonitis, non-puerperal (116).	116. Simple peritonitis (non-puerperal).

FORMS OF THE INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH.—*Continued.*

Abridged Classification.	Detailed Classification.
92. Appendicitis (118).	118. Appendicitis and abscess of the iliac fossa.
93. Other diseases of the digestive system (cancer and tuberculosis excepted) (117).	117. Other diseases of the digestive system (cancer and tuberculosis excepted).
VI.—DISEASES OF GENITO-URINARY SYSTEM.	VI.—DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ADNEXA.
94. Acute nephritis (119).	119. Acute nephritis.
95. Bright's disease (120).	120. Bright's disease.
96. Other diseases of kidneys (121).	121. Other diseases of the kidneys and their adnexa.
97. Calculi of urinary tract (122).	122. Calculi of the urinary tract.
98. Diseases of bladder (123).	123. Diseases of the bladder.
	124. Diseases of the urethra, urinary abscess, etc.
	125. Diseases of the prostate.
99. Diseases of male genital organs (non-venereal) (126).	126. Non-venereal diseases of the male genital organs.
	127. Metritis.
	128. Uterine hemorrhage (non-puerperal).
100. Uterine tumor (129).	129. Uterine tumor (non-cancerous).
101. Other diseases of uterus (127, 128, 130).	130. Other diseases of the uterus
102. Ovarian tumor (131).	131. Cysts and other tumors of the ovary.
103. Diseases of the tubes (132).	132. Other diseases of the female genital organs
104. Diseases of female genital organs (non-venereal) (132).	
105. Other diseases of the genito-urinary system (124, 125, 126, 132, 133).	133. Non-puerperal diseases of the breast (cancer excepted).
*VII.—THE PUERPERAL STATE.	VII.—THE PUERPERAL STATE.
	134. Accidents of pregnancy.
	135. Puerperal hemorrhage.
	136. Other accidents of labor.
106. Puerperal septicæmia (137).	137. Puerperal septicæmia.
107. Puerperal convulsions (138).	138. Puerperal albuminuria & convulsions.
	139. Phlegmasia alba dolens (puerperal).
	140. Other puerperal accidents — sudden death.
108. Other causes incident to child-birth (134, 135, 136, 139, 140, 141).	141. Puerperal diseases of the breast.
VIII.—DISEASES OF SKIN.	VIII.—DISEASES OF THE SKIN AND CELLULAR TISSUE.
109. Gangrene (142).	142. Gangrene.
110. Carbuncle (143).	143. Furuncle.
111. Abscess (144).	144. Acute abscess, phlegmon.
112. Other diseases of skin (145).	145. Other diseases of the skin and its adnexa.
IX.—DISEASES OF LOCOMOTOR SYSTEM.	IX.—DISEASES OF THE ORGANS OF LOCOMOTION.
113. Diseases of the bones (146).	146. Nontuberculous diseases of the bones.
114. Diseases of the joints (147).	147. Arthritis and other diseases of the joints (tuberculosis and rheumatism excepted).

*The distinction between puerperal and non-puerperal diseases should be carefully maintained. Whenever the death of a female of child bearing age is reported from any disease which may have been puerperal, the medical attendant should state whether or not it was puerperal.

FORMS OF THE INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATHS.—*Concluded.*

Abridged Classification.	Detailed Classification.
115. Other diseases of locomotor system (148, 149).	148. Amputation. 149. Other diseases of the organs of locomotion.
X.—MALFORMATIONS.	X.—MALFORMATIONS.
116. Congenital malformations (still-births excluded) (150).	150. Congenital malformations (stillbirths excluded).
XI.—EARLY INFANCY.	XI.—EARLY INFANCY.
117. Premature birth (151). 118. Congenital debility (151, 152, 153).	151. Congenital debility, icterus and sclerema. 152. Other diseases peculiar to early infancy. 153. Lack of care.
XII.—OLD AGE.	XII.—OLD AGE.
119. Old age (154).	154. Senile debility.
XIII.—VIOLENCE AND OTHER EXTERNAL CAUSES.	XIII.—EXTERNAL CAUSES.
120. Suicides (155-163) inclusive.	155. Suicide by poison. 156. Suicide by asphyxia. 157. Suicide by hanging or strangulation. 158. Suicide by drowning. 159. Suicide by firearms. 160. Suicide by cutting instruments. 161. Suicide by jumping from high places. 162. Suicide by crushing. 163. Other suicides.
121. Fractures and dislocations (164, 165).	164. Fractures. 165. Dislocations.
122. Burns and scalds (167).	167. Burns and Scalds. 168. Burns from corrosive substances.
123. Physical phenomena (169, 170, 171).	169. Sunstroke. 170. Freezing. 171. Electric shock (including lightning).
124. Drowning (172).	172. Accidental drowning.
125. Inhalation of poisonous gases (174).	173. Inanition (starvation). 174. Absorption of deleterious gases (non-suicidal).
126. Other accidental poisonings (175). 127. Other accidental traumatisms (166). 128. Injuries at birth 129. Homicide (176).	175. Other acute poisonings. 166. Other accidental traumatisms. 176. Other external violence.
XIV.—ILL-DEFINED DISEASES.	XIV.—ILL-DEFINED DISEASES.
130. Dropsy (177). 131. Heart failure (179). 132. Other ill-defined causes (178, 179). 133. Unknown causes (179).	177. Dropsy. 178. Sudden death. 179. Causes of death unspecified or ill-defined.
134. XV.—STILL BIRTHS.	

TABLE No. 1.

Table Showing the Total Number of Births, Marriages and Deaths, and Ratio per 1,000 in each County in 1907.

Counties.	Estimated Population.	Births.	Ratio per 1,000.	Marriages.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Total.
Totals.....	2,220,430	53,584	24.1	21,915	9.8	33,502	15.0	109,001
Algoma	46,145	1,370	29.6	482	10.4	566	12.2	2,418
Brant	38,768	938	24.1	359	9.2	588	15.4	1,885
Bruce	60,001	1,187	19.7	369	6.1	776	12.9	2,332
Carleton.....	98,514	2,567	26.0	959	9.7	1,811	18.3	5,337
Dufferin.....	21,388	340	15.8	134	5.1	256	11.9	730
Elgin	44,309	889	20.0	341	7.6	550	12.4	1,780
Essex.....	59,488	1,385	23.2	2,168	36.2	774	13.0	4,327
Frontenac	45,274	837	18.4	356	7.8	706	15.5	1,899
Grey	70,744	1,438	20.3	492	6.8	837	11.8	2,767
Haldimand	21,589	408	18.7	151	6.9	240	11.1	799
Haliburton	6,667	216	32.3	32	4.7	84	12.5	332
Halton	19,870	429	21.5	134	6.7	263	13.2	826
Hastings	60,276	1,393	23.1	493	8.1	851	14.1	2,737
Huron	62,846	1,166	18.5	423	6.7	726	11.5	2,315
Kent.....	58,378	1,120	19.1	402	6.9	801	14.5	2,323
Lambton	57,584	1,073	18.5	509	8.8	770	13.3	2,352
Lanark.....	37,851	697	18.4	249	6.5	480	12.8	1,426
Leeds and Grenville....	59,975	1,162	19.3	437	7.3	877	14.6	2,476
Lennox and Addington.	23,733	404	17.0	156	6.5	308	12.1	868
Lincoln.....	31,059	652	20.9	236	7.5	450	14.4	1,338
Middlesex.....	94,242	1,929	20.4	863	9.1	1,365	14.4	4,157
Muskoka	21,320	605	28.3	167	7.8	238	11.1	1,010
Nipissing	27,184	1,742	64.0	455	16.7	845	31.0	3,042
Norfolk	29,630	572	19.3	232	7.7	348	11.7	1,152
Northumberland and Durham.....	63,080	1,164	18.4	449	7.1	869	13.7	2,482
Ontario.....	41,079	860	20.9	250	6.0	507	12.3	1,617
Oxford	49,209	986	20.0	381	7.7	714	14.5	2,081
Parry Sound.....	25,350	759	29.8	225	8.0	355	14.0	1,339
Peel.....	21,832	381	17.4	129	5.8	270	12.3	780
Perth	50,699	1,029	20.2	394	7.7	569	11.2	1,992
Peterborough.....	36,655	870	23.7	303	8.2	507	13.8	1,680
Prescott and Russell....	48,102	1,733	16.0	402	8.3	811	16.8	2,946
Prince Edward	18,167	321	17.6	147	8.0	268	14.7	736
Rainy River.....	16,714	441	26.3	161	9.6	383	22.8	985
Renfrew.....	53,588	1,391	25.9	384	7.1	644	12.0	2,419
Simcoe	83,682	2,032	24.6	671	8.0	1,113	13.3	3,816
Stormont, Dundas and Glengarry	70,075	1,465	20.9	487	6.9	950	13.5	2,902
Thunder Bay.....	12,754	784	61.4	276	21.6	485	37.9	1,545
Victoria.....	32,482	686	21.1	211	6.4	449	13.8	1,346
Waterloo	53,466	1,325	24.7	482	8.9	681	12.7	2,488
Welland.....	32,112	738	22.8	404	12.5	521	16.2	1,663
Wellington	56,569	1,099	19.4	416	7.3	684	12.0	2,199
Wentworth	80,777	2,280	28.2	951	11.7	1,419	17.5	4,650
York.....	277,193	8,721	31.4	4,193	15.1	5,793	20.8	18,707

TABLE No. 2.

Table Showing the Total Number of Births, Marriages and Deaths, and Ratio per 1,000 of Population in each City of Ontario, 1907.

Counties.	Estimated Population.	Births.	Ratio per 1,000.	Marriages.	Ratio per 1,000.	Deaths.	Ratio per 1,000	Total.
Total.....	548,810	15,269	27.9	9,105	16.5	10,576	19.2	30,950
Belleville.....	9,274	207	22.3	95	10.2	181	19.5	483
Brantford	19,224	576	29.9	228	11.8	359	18.6	1,163
Chatham	9,077	161	17.7	105	11.5	208	22.9	474
Fort William.....	4,181	393	94 0	132	31.5	229	54.7	754
Guelph	12,113	255	21.0	149	12.3	194	16.0	598
Hamilton.....	54,956	1,654	30.0	774	14.0	963	17.5	3,391
Kingston	18,270	369	20.1	222	12.1	398	21.7	989
London	42,116	1,003	23.8	571	13.5	677	16.0	2,251
Niagara Falls	4,892	187	38.2	187	38.2	115	23 5	489
Ottawa.....	77,617	1,795	23.1	677	8.7	1,340	17.2	3,812
Peterboro'.....	12,264	367	29.9	164	13.3	231	18.8	762
Port Arthur.....	3,570	267	74.7	125	35.0	197	55.0	589
St. Catharines.....	10,443	266	25.4	122	11.6	190	18.1	578
Stratford.....	10,245	286	28.0	128	12.4	125	12.2	539
St. Thomas	12,195	306	25.0	168	13.7	187	15.3	661
Toronto.	226,001	6,680	29.5	3,614	15.9	4,571	20.2	14,865
Windsor	13,404	306	22.8	1,562	116.5	252	18 8	2,120
Woodstock.....	8,968	191	21.2	82	9.1	159	17.7	432

TABLE No. 3.

Table Showing Total Number of Births, Marriages and Deaths, Ratio per 1,000 of Population in each Town of Ontario of Over 5,000.

Towns.	Estimated Population.	Births.	Ratio per 1,000.	Marriages.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Total.
Total.....	122,064	3,097	25.3	1,522	12.4	2,238	18.3	6,857
Barrie.....	6,292	183	29.4	104	16.7	106	17.0	393
Berlin.....	11,475	319	27.7	138	12.0	181	15.7	638
Brockville.....	9,031	255	28.2	100	11.0	161	17.8	516
Collingwood	6,308	211	33.4	89	14.1	110	17.4	410
Cornwall.....	6,819	93	13.6	54	7.9	160	23.4	307
Galt.....	8,071	187	23.1	109	13.5	133	16.4	429
Hawkesbury	6,351	227	35.7	34	5.3	104	16.3	365
Kenora.	9,713	138	14.2	56	5.7	265	27.2	459
Lindsay	7,622	149	19.5	76	9.5	111	14.5	336
Owen Sound.....	9,646	302	31.3	133	13 7	227	23.5	662
Pembroke	5,670	146	25.7	77	13.5	105	18.5	328
Sarnia	9,144	213	23.2	220	24.0	163	17.8	596
Sault Ste. Marie.....	13,683	214	15 6	168	12.2	140	10.2	622
Smith's Falls.....	6,128	128	20 8	40	6.5	95	15.5	263
Toronto Junction.....	6,202	332	53.5	124	19.9	177	28.5	633

TABLE No. 4.—Showing the birth rate per 1,000 population in each County of the Province for ten years.

Counties.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	Total.
Totals	46,599	44,705	46,127	46,061	47,796	48,642	50,265	51,911	51,710	53,584	487,400
	20.4	19.1	19.8	21.1	21.7	22.1	22.8	23.5	23.3	24.1	22.8
Algoma	817	826	840	978	1,391	1,431	1,411	1,525	1,340	1,370	11,959
	45.8	45.9	46.2	22.0	30.3	31.3	31.4	33.2	29.1	29.6	34.4
Brant	702	756	697	745	752	753	781	859	809	938	7,792
	17.9	19.1	17.4	19.5	19.5	19.6	20.2	22.2	20.9	24.1	20.0
Bruce	1,310	1,244	1,321	1,217	1,271	1,192	1,300	1,268	1,192	1,187	12,502
	18.8	17.7	18.6	20.6	21.3	20.0	21.8	21.2	19.9	19.7	19.9
Carleton	2,183	2,039	2,054	2,461	2,408	2,275	2,281	2,433	2,436	2,567	23,137
	26.2	24.2	24.1	25.4	24.6	23.3	23.3	24.8	24.7	26.0	24.6
Dufferin	449	435	453	434	429	460	453	435	425	340	4,313
	18.8	18.0	18.1	20.6	20.2	21.7	21.3	20.4	15.0	15.8	18.9
Elgin	763	718	766	703	780	740	785	786	861	889	7,791
	16.4	15.2	16.1	16.1	17.7	16.8	17.8	12.8	19.4	20.0	16.8
Essex	1,607	1,506	1,490	1,471	1,522	1,719	1,602	1,615	1,549	1,385	15,466
	26.9	25.0	24.5	25.1	25.8	21.1	27.1	27.2	26.1	23.2	25.2
Frontenac	919	886	918	862	900	820	899	878	926	837	8,845
	18.2	17.4	17.8	19 3	20.0	18.2	20.0	19.4	20.4	18.4	18.9
Grey	1,426	1,320	1,407	1,539	1,447	1,425	1,519	1,512	1,358	1,438	14,386
	18.6	17.1	18.0	22.1	20.6	20.3	21.6	21.4	19.1	20 3	19.9
Haldimand	403	369	375	376	399	379	420	388	441	408	3,958
	16.0	14.5	14.6	17.7	18.5	17.7	19.6	18.0	20.4	18.7	17.0
Halton	410	422	408	344	364	369	407	448	408	429	4,009
	17.3	17.7	16.9	17.6	18.4	18.7	20.6	22.6	20.5	21.5	19.1
Haliburton	222	182	177	202	195	186	233	203	197	216	2,013
	32.6	26.4	25.6	30.8	29.4	28.1	35.2	30.6	29.6	32.3	30.0
Hastings	1,202	1,124	1,203	1,091	1,161	1,187	1,229	1,148	1,150	1,393	11,888
	18.9	17.5	18.5	18.4	19.4	19 8	20.5	19.1	19.1	23.1	19.3
Huron	1,278	1,254	1,159	1,133	11,49	1,156	1,121	1,151	1,130	1,166	11,697
	17.8	17.3	15.8	18.3	18.4	18.5	17.9	18.4	18.0	18.5	17.8
Kent	1,313	1,244	1,321	1,183	1,216	1,248	1,174	1,191	1,223	1,120	12,233
	20 8	19.5	20.5	20.6	21.0	21.5	20.2	20.5	21.0	19.1	20.4
Lambton	1,170	1,143	1,167	1,167	1,136	1,148	1,136	1,194	1,193	1,073	11,527
	19.8	19.2	19.4	20.6	19.9	20.1	19.8	20.8	20.7	18.5	18.9
Lanark	743	700	742	705	744	728	715	682	702	697	7,158
	18.3	17.1	17.9	18.9	19.8	19.4	19.0	18.1	18.5	18.4	18.5
Leeds and Grenville	1,062	969	1,012	994	1,059	1,081	1,140	1,118	1,124	1,162	10,721
	16.2	14.6	15.1	16.8	17.8	18.2	19.1	18.7	18.7	19.3	17.4
Lennox and Addington	467	472	420	465	405	436	410	431	360	404	4,270
	17.5	17.6	15.5	19.9	17.2	18.5	17.4	18.2	15.1	17.0	17.3
Lincoln	560	575	564	615	552	616	567	680	669	652	6,050
	17.3	17.6	17.1	20.1	17.9	20.0	18.3	22.0	21.6	20.9	19.2
Middlesex	1,615	1,651	1,673	1,639	1,625	1,803	1,917	1,839	1,883	1,929	17,574
	14.7	14.9	14.9	17.7	17.3	19.3	20.4	18.1	20.0	20.4	17.7
Muskoka	601	534	537	611	590	636	643	633	654	605	6,044
	33.8	29.7	29.5	29.1	27.8	30.1	30.3	29.8	30.7	28.3	29.9
Nipissing	897	955	961	1,068	1,077	1,332	1,321	1,608	1,457	1,742	12,418
	70.9	74 0	74.5	40.4	39.9	49.4	48.9	59.4	53.7	64.0	57.5
Norfolk	641	601	609	563	593	507	591	579	538	572	5,794
	19.2	17.8	17.9	19.3	20.1	17.2	20.0	19.6	18.2	19.3	18.8
Northumberland and Durham	1,218	1,168	1,146	1,035	1,144	1,058	1,169	1,121	1,110	1,164	11,333
	16.1	15.2	14.8	16.7	18.2	16.9	18.6	17.8	17.6	18.4	16.9
Ontario	854	842	858	796	878	769	958	798	805	860	8,418
	17.5	17.1	17.1	19.7	21.5	18.9	23.4	19.5	19.6	20 9	19.5
Oxford	1,073	1,000	998	1,033	1,038	964	976	1,001	975	986	10,038
	20.0	18.5	18.2	21.3	21.2	19.7	19.9	20.4	19.8	20.0	19.9
Parry Sound	680	675	684	701	738	766	771	657	814	759	7,245
	43.0	42.3	42.4	28.1	29.3	30.5	30.6	26.0	32.2	29.8	33.4
Peel	408	385	388	381	371	377	328	377	384	381	3,780
	15.3	14.2	14.2	17.7	17.1	17.4	15.1	17.3	17.6	17.4	16.3
Perth	999	993	991	972	997	978	1,034	1,033	1,054	1,029	10,080
	18.0	17.7	17.5	19.5	19.8	19.4	20.5	20.4	20.8	20.2	19.3
Peterborough	831	795	776	723	789	788	891	850	870	870	8,183
	21.9	20.7	20.1	20.0	21.6	21.7	24.4	23.3	23.7	23.7	22.1
Prescott and Russell	1,623	1,660	1,591	1,792	1,714	1,824	1,775	1,950	1,819	1,733	17,481
	35.6	36.1	34.2	37.9	35.9	38.3	37.1	40.7	37.9	16.0	34.9
Prince Edward	305	318	290	247	295	267	270	296	315	321	2,924
	15.0	15.5	14.0	13.8	16.3	14.8	14.9	16.3	17.3	17.6	15.5
Rainy River	235	257	329	302	291	327	343	356	382	441	3,263
	52.1	56.4	71.5	18.4	17.5	19.7	20.6	21.4	22.9	26.3	32.6
Renfrew	1,357	1,366	1,392	1,487	1,369	1,427	1,465	1,508	1,381	1,391	14,143
	27.4	27.3	27.6	28.2	25.7	26.8	27.5	28.2	25.8	25.9	26.8
Simcoe	1,744	1,593	1,759	1,659	1,765	1,873	1,937	1,986	1,957	2,032	18,305
	22.8	20.4	22.4	20.1	21.2	22.6	23.3	23.8	23.2	24.6	22.4
Stormont, Dundas and Glengarry	1,338	1,292	1,382	1,456	1,410	1,518	1,581	1,531	1,469	1,465	14,442
	17.8	17.1	18.1	21.1	20.3	21.8	22.7	21.9	21.0	20.9	20.2
Thunder Bay	254	203	262	252	323	379	493	501	638	784	4,089
	43.5	31.4	41.0	20.0	25.5	30.0	38.9	39.4	50.1	61.4	38.1
Victoria	729	675	692	678	724	711	648	685	727	686	6,955
	20.5	18.8	19 1	21.2	22.4	22.1	20.0	21.2	22.4	21.1	20.8
Waterloo	1,151	1,102	1,104	1,047	1,138	1,148	1,190	1,327	1,250	1,325	11,782
	21.2	20.1	19.9	19.9	21.4	21.6	22.4	24.9	23.4	24.7	21.
Welland	656	625	647	626	631	676	661	728	749	738	6,737
	19.9	18.8	19.3	19 8	19.8	21.2	20.7	22.7	23.3	22.8	20.8
Wellington	1,197	1,018	1,118	1,022	1,074	1,054	1,086	1,065	1,076	1,099	10,809
	18.7	15.8	17.2	18.4	19.1	18.8	19.3	18.9	19.0	19.4	18.4
Wentworth	1,678	1,471	1,506	1,434	1,495	1,603	1,752	1,965	2,007	2,280	17,191
	19.8	17.2	17.4	18.0	18.6	20.0	21.8	24.4	24.9	28.2	20.7
York	5,509	5,342	5,940	5,852	6,447	6,508	6,852	7,572	7,908	8,721	66,651
	18.2	17.5	19.3	21.5	23.4	23.7	24.9	27.4	28.6	31.4	23.

TABLE No. 5.— Showing the marriage rate per 1,000 of population in each County of the Province for ten years.

Counties.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	Total.
Totals	15,375	16,514	17,107	18,035	18,072	19,830	19,789	20,426	19,846	21,915	186,909
	6.7	7.1	7.3	8.2	8.2	9.0	8.9	9.2	8.9	9.8	8.3
Algoma	195	209	268	370	357	477	401	464	387	482	3,610
	10.9	11.6	14.7	8.3	7.8	10.4	8.7	10.1	8.4	10.4	10.1
Brant	261	251	277	292	241	340	271	314	330	359	2,936
	6.6	6.3	6.9	7.7	6.2	8.8	7.0	8.0	8.5	9.2	7.5
Bruce	370	394	397	381	422	460	417	389	374	369	3,973
	5.3	5.6	5.6	6.4	7.1	7.7	7.0	6.5	6.2	6.1	6.3
Carleton	661	727	741	780	799	833	831	939	812	959	8,082
	7.6	8.6	8.7	8.0	8.2	8.5	8.4	9.5	8.2	9.7	8.5
Dufferin	152	162	163	169	189	190	160	141	142	134	1,602
	6.3	6.7	6.7	8.0	8.9	8.9	7.5	6.6	6.6	5.1	7.1
Elgin	268	310	354	359	307	360	353	369	315	341	3,336
	4.0	6.5	7.4	8.3	7.0	8.2	8.0	8.3	7.1	7.6	7.2
Essex	1,117	1,236	1,305	1,415	1,577	1,675	1,595	1,911	1,843	2,168	15,842
	18.7	20.5	21.4	21.2	26.7	28.4	27.0	32.2	31.0	36.2	26.6
Frontenac	290	301	332	322	274	370	349	324	307	356	3,225
	5.7	5.9	6.6	7.2	6.1	8.2	7.5	7.1	6.8	7.8	6.8
Grey	405	491	504	572	507	543	546	542	476	492	5,078
	5.3	6.3	6.4	8.2	7.2	7.7	7.7	7.7	6.7	6.8	7.0
Haldimand	148	155	155	174	139	188	189	182	127	151	1,608
	5.8	6.1	6.0	8.2	6.5	8.7	8.8	8.4	5.8	6.9	7.1
Halton	84	115	131	122	120	116	134	147	132	134	1,235
	3.5	4.8	5.4	6.2	6.1	5.8	6.8	7.4	6.6	6.7	5.9
Haliburton	33	40	45	49	43	42	50	27	41	32	411
	4.8	7.1	6.4	7.5	6.5	6.3	7.5	4.0	6.1	4.7	6.0
Hastings	448	470	498	500	530	509	461	466	448	493	4,823
	7.0	7.3	7.5	8.4	8.9	8.5	7.7	7.7	7.4	8.1	7.8
Huron	380	430	419	457	410	434	428	429	411	428	4,221
	5.3	5.9	5.7	7.4	6.6	6.9	6.8	6.8	6.5	6.7	6.4
Kent	422	469	437	518	513	485	453	403	437	402	4,539
	6.7	7.3	6.8	9.0	8.9	8.3	7.8	6.9	7.5	6.9	7.6
Lambton	398	436	419	432	485	462	479	485	466	509	4,571
	6.7	7.3	6.9	7.6	8.5	8.1	8.3	8.4	8.1	8.8	7.8
Lanark	272	264	279	293	240	263	271	260	260	249	2,654
	6.7	6.4	6.7	7.9	6.4	7.0	7.2	6.9	6.8	6.5	6.8
Leeds and Grenville	402	416	485	460	454	447	452	449	428	437	4,450
	6.1	6.3	7.3	7.8	7.6	7.5	7.6	7.5	7.1	7.3	7.2
Lennox and Addington	183	192	203	227	173	180	186	180	157	156	1,837
	6.8	7.1	7.5	9.7	7.3	7.6	7.8	7.6	6.6	6.5	7.4
Lincoln	164	197	224	175	223	223	232	237	240	236	2,151
	5.3	6.0	6.8	5.7	7.2	7.2	7.5	7.6	7.7	7.5	6.8
Middlesex	615	715	691	659	704	817	804	799	793	862	7,460
	5.5	6.4	6.2	7.1	7.5	8.7	8.5	8.5	8.4	9.1	7.5
Muskoka	108	134	156	159	143	166	183	172	173	167	1,561
	6.1	7.4	8.6	7.6	6.7	7.8	8.6	8.1	8.1	7.8	7.6
Nipissing	167	182	215	271	269	292	259	312	321	455	2,743
	13.2	14.2	16.6	10.2	9.9	10.8	9.5	11.5	11.8	16.7	12.4
Norfolk	204	241	238	204	246	233	213	212	203	232	2,226
	6.1	7.1	7.0	7.0	8.3	7.9	7.2	7.2	6.8	7.7	7.2
Northumberland and Durham	419	412	371	459	399	422	454	453	451	449	4,289
	5.5	5.3	4.8	7.4	6.3	6.7	7.2	7.2	7.1	7.1	6.4
Ontario	257	258	272	249	261	305	290	262	287	250	2,691
	5.2	5.2	5.4	6.1	6.4	7.4	7.1	6.4	6.9	6.0	6.2
Oxford	332	333	382	352	343	367	362	370	303	381	3,525
	6.2	6.1	7.0	7.3	7.0	7.5	7.4	7.5	6.1	7.7	6.9
Parry Sound	121	143	152	185	181	177	156	171	203	225	1,714
	7.6	8.9	9.4	7.4	7.2	7.0	6.1	6.7	8.0	8.9	7.6
Peel	176	112	142	124	129	153	165	144	144	129	1,358
	4.3	4.1	5.2	5.8	5.9	7.0	7.6	6.6	6.6	5.8	5.8
Perth	374	357	362	383	355	385	386	406	402	394	3,804
	6.7	6.3	6.4	7.7	7.0	7.6	7.6	8.0	7.9	7.7	7.2
Peterborough	262	223	258	258	312	330	337	319	323	303	2,925
	6.9	5.8	6.6	7.1	8.5	9.0	9.2	8.7	8.8	8.2	7.8
Prescott and Russell	353	326	392	372	328	375	358	375	326	402	3,607
	7.7	7.1	8.4	7.9	6.9	7.8	7.4	7.8	6.7	8.3	7.6
Prince Edward	123	136	132	120	123	144	124	131	134	147	1,314
	6.0	6.6	6.4	6.7	6.8	8.0	6.8	7.2	7.3	8.0	6.9
Rainy River	102	117	111	119	88	92	111	132	144	161	1,177
	22.6	25.7	24.1	7.2	5.3	5.5	6.6	7.9	8.6	9.6	12.3
Renfrew	342	338	406	346	329	403	400	382	374	384	3,704
	6.9	6.7	8.0	6.5	6.2	7.5	7.5	7.1	6.9	7.1	7.0
Simcoe	544	561	537	638	545	680	660	660	626	674	6,125
	7.0	7.2	6.8	7.7	6.6	8.2	7.9	7.9	7.5	8.0	7.4
Stormont, Dundas and Glengarry	435	463	460	459	426	493	470	485	448	487	4,626
	5.8	6.1	6.0	6.7	6.1	7.1	6.6	6.9	6.4	6.9	6.4
Thunder Bay	73	76	90	90	113	159	198	196	212	271	1,483
	12.5	12.8	15.1	7.2	8.9	12.5	15.5	15.4	16.6	21.0	13.8
Victoria	224	223	244	241	256	224	301	218	237	211	2,379
	6.3	6.2	6.7	7.5	7.9	6.9	9.3	6.7	7.0	6.4	7.0
Waterloo	309	352	402	413	432	454	451	422	418	482	4,135
	5.7	6.4	7.2	7.8	8.1	8.5	8.4	7.9	7.8	8.9	7.6
Welland	258	297	305	357	323	342	351	369	378	404	3,387
	7.8	8.9	9.1	11.3	10.1	10.7	11.1	11.5	11.8	12.5	10.4
Wellington	359	392	446	363	403	451	412	407	392	416	4,041
	5.6	6.1	6.8	6.5	7.2	8.0	7.3	7.2	6.9	7.3	6.8
Wentworth	566	603	572	645	658	725	772	840	850	951	7,182
	6.7	7.0	6.6	8.1	8.2	9.0	9.6	10.4	10.5	11.7	8.7
York	2,059	2,243	2,135	2,502	2,703	3,044	3,308	3,531	3,571	4,193	29,289
	6.8	7.3	6.9	9.2	9.8	11.0	12.0	12.8	12.1	15.1	10.3

TABLE No. 6.— Showing the Death rate per 1,000 of population in each County of the Province for ten years.

Counties.	1898.	1899.	1900	1901.	1902.	1903.	1904.	1905.	1906.	1907.	Total.
Totals	26,370	28,607	29,491	29,608	27,864	29,664	31,290	31,371	32,782	33,502	300,552
	11.5	12.4	12.6	13.6	12.6	13.4	14.1	14.2	14.8	15.0	13.4
Algoma	250	288	432	461	631	569	541	620	651	566	5,009
	14.0	16.0	23 7	10.4	13.8	12.4	11.8	13.5	14.1	12.2	14 1
Brant	440	509	435	489	464	442	513	498	455	588	4,833
	11.2	12.9	10.9	12.8	12.0	11.5	13.8	12.9	11.7	15.4	12.5
Bruce	601	713	708	666	621	713	735	742	796	776	7,071
	8.6	10.1	10.0	11.3	10.4	12.0	12.3	12.4	13.3	12.9	11.3
Carleton	1,650	1,676	1,745	1,825	1,608	1,700	1,627	1,734	1,719	1,811	17,095
	19.8	19.9	20.5	18.8	16.4	17.4	16.6	17.6	17.2	18.3	18.2
Dufferin	230	246	257	238	192	242	269	263	287	256	24,80
	9.6	10.2	10.5	11.3	9.0	11.1	12.6	12.3	13.4	11.9	11.1
Elgin	477	492	492	535	469	480	586	489	575	550	5,145
	10.2	10.4	10.3	12.2	10.6	10.9	13.3	11.0	13.0	12.4	11.4
Essex	737	799	749	775	774	767	784	727	893	774	7,779
	12.3	12.2	12.3	13.3	13.1	13.0	13.2	12.2	15.0	13.0	13.0
Frontenac	705	654	705	710	613	724	640	643	691	706	6,791
	13.9	12.8	13.6	16.0	13.6	16.1	14.2	14.2	15.3	15.5	14.5
Grey	754	749	774	861	775	801	880	885	830	837	8,146
	9.8	9.7	9.9	12.3	11.0	11.4	11.1	12.5	11.7	11.8	11.1
Haldimand	248	261	251	261	243	210	266	245	267	240	2,492
	9.8	10.2	9.8	12.3	11.3	9.8	12.4	11.4	12.4	11.1	11.0
Halton	223	256	272	286	238	230	273	264	309	263	2,614
	9.4	4.7	11.3	14.6	12.1	11.6	13.8	13.3	15.5	13.2	11.9
Haliburton	65	71	63	73	67	80	81	74	77	84	735
	9.5	10.3	9.0	11.1	10.1	12.1	12.2	11.1	11.5	12.5	10.9
Hastings	689	715	747	676	691	710	728	736	718	851	7,455
	10.8	11.1	11.6	14.4	11.5	11.8	12.1	12.1	11.9	14.1	12.1
Huron	658	762	726	732	623	691	710	692	743	726	7,663
	9.2	10.5	9.9	11.8	10.0	11.1	11.3	11.0	11.7	11.5	10.8
Kent	731	772	748	768	694	672	742	746	777	801	7,451
	11.6	12.1	11.6	13.4	12.0	11.6	12.8	12.8	13.3	14.5	12.5
Lambton	575	731	706	751	693	695	704	742	782	770	7,149
	9.7	12.3	11.7	13.3	12.1	12.1	12.3	12.6	13.6	13 3	12.3
Lanark	465	462	482	492	439	446	510	516	466	480	4,758
	11.4	11.3	11.6	13.2	11.7	11.8	13 5	13.7	12.3	12 8	12.3
Leeds and Grenville	823	835	809	856	796	897	906	892	843	877	8,534
	12.6	12.6	12.1	14.4	13.4	15.1	15.2	14.9	13.2	14 6	13.8
Lennox and Addington	302	319	287	304	278	268	263	280	305	308	2,914
	11.3	11.9	10.6	13.0	11.8	11.4	11.1	12.2	12.8	12.1	13.1
Lincoln	405	439	461	433	390	390	488	472	492	450	4,420
	12.5	13.4	14.0	14.1	12.6	12.6	15.8	15.2	15.8	14.4	14.0
Middlesex	1,099	1,205	1,169	1,254	1,258	1,285	1,427	1,357	1,348	1,365	12,767
	10.0	10.9	10.4	13.5	13.4	13.7	15.2	11.4	14.3	14 4	13.0
Muskoka	196	233	268	245	238	250	281	334	294	238	2,577
	11.0	13.0	14.7	11.7	11.2	11.8	13.2	15.7	13.8	11.1	12.7
Nipissing	259	340	433	454	437	479	502	640	775	845	5,164
	20.5	26.6	33.7	17.0	16.2	17.7	13.4	13.0	28.5	31.0	21.7
Norfolk	348	399	387	393	393	342	421	366	372	348	3,769
	10.4	11.8	11.9	13.4	13.3	11.6	18.6	23.6	12.5	11.7	13.8
Northumberland and Durham	877	934	870	852	872	856	842	816	813	869	8,601
	11.6	12.2	11.9	13.7	13.9	13.7	14.3	12.4	12.9	13.7	13.0
Ontario	503	507	582	536	524	495	526	499	529	507	5,208
	10.3	10.2	11.7	13.3	12.8	12.1	12.9	12.2	12.9	12.3	12.0
Oxford	615	694	707	669	601	649	714	726	783	714	6,872
	11.5	12.8	12.9	13.8	12.3	13.3	14.6	14.8	15.9	14.5	13.6
Parry Sound	215	261	310	255	286	260	311	299	382	355	2,934
	13.6	16.3	19.2	10.2	11.3	10.3	12.6	13.4	5.1	14.0	12.5
Peel	245	292	261	283	235	268	288	306	261	270	2,709
	9.2	10.8	9.6	13.2	10.8	12.3	12.3	11.8	11.9	12.3	11.4
Perth	601	533	590	608	554	620	550	526	570	569	5,721
	10.8	9.5	10.4	12.2	10.0	12.3	13.2	14.0	11.2	11.2	11.4
Peterborough	481	516	479	460	518	539	552	489	518	507	5,059
	12.7	13.3	12.4	12.8	14.2	14.8	18.9	10.4	14.1	13.8	13.7
Prescott and Russell	623	705	747	857	662	784	704	758	713	811	7,364
	13.6	15.3	16.1	18 0	13.8	16.4	15.6	13.4	14.8	16.8	15.4
Prince Edward	224	249	249	277	248	239	231	243	241	268	2,472
	11.0	12.1	12.0	15.5	13.7	13.2	14.7	15.8	13.4	14.7	13.6
Rainy River	119	154	210	152	142	131	180	187	306	383	1,964
	26.1	33.8	45.6	9.3	8.5	7.9	10.8	11.2	18.3	22.8	19.4
Renfrew	490	516	572	646	594	639	644	726	673	644	6,144
	9.9	10.3	11.3	12.2	11.1	12.0	12.1	13.6	12.5	12.0	11.7
Simcoe	872	945	1,021	927	943	1,034	1,057	1,118	1,252	1,113	10,282
	11.3	12.1	13.0	11.2	11.3	12.4	12.7	13.4	15.0	13.3	12.5
Stormont, Dundas and Glengarry	847	906	835	886	795	794	952	912	901	950	8,772
	11.3	11.9	10.9	12.8	11.4	11.4	13.6	13.0	12.8	13.5	12.2
Thunder Bay	96	128	180	141	213	253	329	267	564	485	2,656
	16.4	21.7	30.2	11.5	16.8	20.0	25.0	21.0	44.3	37.9	24.4
Victoria	385	372	423	393	383	403	391	393	372	449	3,964
	10.8	10.4	11.7	12.3	11.9	12.5	12.1	12.1	11.4	13.8	11.9
Waterloo	554	613	664	619	531	599	613	635	682	681	6,191
	10.2	11.2	12.0	11.8	10.0	11.3	11.5	11.9	12.7	12.7	11.5
Welland	425	435	408	432	402	451	502	499	484	521	4,559
	12.9	13.1	11.8	13.7	12.6	14.1	15.7	15.6	15.1	16.2	14.4
Wellington	593	705	695	677	618	708	755	701	746	684	6,882
	9.3	10.9	10.6	12.2	10.0	12.6	13.4	12.4	13.2	12.0	11.6
Wentworth	1,104	1,099	1,126	1,167	1,103	1,172	1,341	1,318	1,388	1,419	12,237
	13.0	12.8	13.0	14.7	13.7	14.6	16.7	16.4	17.2	17.5	14.9
York	3,571	4,117	4,459	4,239	4,015	4,687	4,931	4,993	5,136	5,793	47,941
	11.8	13.5	14.5	15.6	14.5	17.0	17.9	18.1	14.9	20.8	15.8

TABLE No. 7.

Recapitulation of Deaths by Classes of Diseases occurring in Counties in 1907.

Causes of Death	Total.	Ages															Sex.			Months.											
		Under 0-1.	1	2	3	4	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated	Male.	Female.	Not stated.	January.	February	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Totals	33,502	8,041	966	396	299	208	673	515	798	2,542	2,117	2,104	2,469	3,564	4,598	3,908	284	17,860	15,560	82	3,128	3,240	3,309	2,934	3,018	2,570	2,416	2,705	2,653	2,586	2,387	2,556
I. (*A*) General (Epidemic) diseases	1,948	364	162	107	94	70	179	88	83	218	120	81	76	77	101	109	16	1,010	938	..	212	235	184	149	160	140	109	162	159	162	107	169
(*B*) Other general diseases	5,110	125	56	36	27	17	78	108	241	927	726	628	680	745	516	161	33	2,348	2,762	..	446	451	468	194	193	100	125	372	364	120	353	121
II. Diseases of nervous system	3,806	678	183	62	36	31	94	69	55	157	167	240	318	565	727	401	23	2,013	1,793	..	313	373	410	370	336	280	301	274	275	270	279	295
III. Diseases of circulatory system	2,666	110	7	6	5	6	29	28	55	127	131	180	352	549	733	326	22	1,400	1,266	..	221	232	251	233	249	233	211	183	171	217	209	226
IV. Diseases of respiratory system	4,265	897	285	94	56	35	84	43	92	212	238	288	308	513	608	183	29	2,256	2,029	..	521	670	639	157	152	273	151	130	144	213	304	311
V. Diseases of digestive system	2,993	1298	174	41	24	20	76	62	74	158	136	142	168	235	289	182	11	1,616	1,377	..	185	172	185	189	158	169	251	537	515	282	183	167
VI. Diseases of genito-urinary system	1,387	51	10	1	6	4	18	16	36	103	109	125	181	257	311	150	6	819	568	..	111	121	133	114	146	116	89	85	125	111	127	109
VII. The puerperal state	233	....	....	....	....	....	....	....	15	96	86	35	1	....	....	....	....	....	233	..	32	13	22	29	27	14	12	22	19	15	17	11
VIII. Diseases of the skin	202	17	1	....	....	....	....	3	2	9	9	10	15	32	54	50	....	118	87	..	23	17	20	20	20	17	13	11	11	16	11	17
IX. Diseases of the locomotor system	39	5	6	2	....	....	2	1	....	5	5	3	3	3	2	1	1	27	12	..	2	1	3	2	5	8	2	5	2	2	1	3
X. Malformations	88	88	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	43	44	1	7	12	11	5	7	2	7	11	2	9	4	11
XI. Early infancy	2,142	2142	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1,189	940	13	202	196	218	156	218	190	159	194	178	161	127	146
XII. Old age	2,615	....	....	....	....	....	....	....	....	....	....	....	1	101	749	1,757	7	1,311	1,301	..	318	299	280	237	206	201	158	173	151	191	207	188
XIII. Violence and other external causes	1,877	69	35	24	34	17	85	70	109	431	273	211	155	113	97	81	73	1,531	343	..	122	110	124	119	161	193	229	191	119	166	159	154
XIV. Ill-defined diseases	2,385	451	67	20	17	8	28	27	33	99	117	161	211	374	458	251	60	1,258	1,125	2	228	199	225	197	212	172	167	214	218	193	160	175
XV. Still-births	1,746	1746	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	938	742	66	155	136	130	113	168	162	132	138	148	128	136	150

TABLE No. 8.

Recapitulation of Deaths by Classes of Diseases occurring in Cities in 1907.

Causes of Death.	Total.	Ages.															Sex.			Months.											
		Under 0-1	1	2	3	4	5-9	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Totals	10,576	2,881	357	134	96	78	226	145	250	865	767	754	858	1,002	1,155	826	82	5,654	4,882	40	897	928	985	947	910	827	800	971	891	807	765	848
I. (*A*) General (Epidemic) diseases	633	92	73	40	37	24	73	30	29	66	51	26	26	20	19	22	5	342	291	..	47	53	55	53	51	59	38	69	60	57	35	56
(*B*) Other general diseases	1,631	46	25	15	7	9	24	32	66	291	246	208	235	239	135	41	12	752	879	..	129	144	155	149	151	146	135	125	117	119	114	147
II. Diseases of nervous system	1,146	207	64	25	15	14	27	21	18	54	53	99	109	151	193	87	9	620	526	..	103	106	111	123	97	91	92	82	88	69	92	92
III. Diseases of circulatory system	954	40	6	1	2	2	15	8	30	54	51	67	142	222	213	94	7	513	441	..	74	75	82	73	95	86	74	69	65	97	69	95
IV. Diseases of the respiratory system	1,347	277	92	30	18	15	28	9	27	81	94	109	100	163	167	124	13	749	598	..	151	179	185	172	142	85	55	55	51	65	101	106
V. Diseases of the digestive system	1,109	557	66	12	5	4	17	20	32	83	57	50	64	62	53	20	7	612	497	..	60	63	57	58	49	56	100	243	192	95	68	68
VI. Diseases of the genito-urinary system	445	22	2	2	1	1	5	2	14	42	44	53	65	77	77	37	1	246	199	..	41	37	37	42	42	37	34	25	37	37	38	38
VII. The puerperal state	61	....	....	....	....	....	....	....	4	28	21	7	1	....	....	....	....	.....	61	..	10	4	9	5	6	5	5	3	3	6	4	1
VIII. Diseases of skin	55	5	1	....	....	....	....	1	....	2	3	4	1	13	18	7	....	26	29	..	8	5	6	5	5	2	4	4	4	2	6	4
IX. Diseases of locomotor system	26	4	4	2	....	....	1	1	....	3	4	3	2	1	1	....	....	20	6	..	1	2	3	1	3	4	2	4	2	1	1	2
X. Malformations	46	46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	22	23	1	5	3	5	2	3	1	4	6	4	7	1	5
XI. Early infancy	750	750	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	423	323	4	73	64	68	66	68	67	60	71	62	61	44	46
XII. Old age	532	....	....	....	....	....	....	....	....	....	....	....	....	28	174	326	4	234	298	..	50	45	61	46	39	42	41	41	38	42	46	41
XIII. Violence and other external causes	580	17	10	4	6	6	31	18	26	134	111	81	50	32	27	15	12	455	125	..	38	41	49	30	47	48	72	64	43	60	50	38
XIV. Ill-defined diseases	586	143	14	3	5	3	5	3	4	27	32	47	63	94	78	53	12	288	296	2	46	55	55	57	49	39	31	56	70	44	39	45
XV. Still Births	675	675	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	352	290	33	61	52	47	65	63	59	53	54	55	45	57	61

TABLE No. 9.

Recapitulation of Deaths by Classes of Diseases occurring in Towns in 1907.

Causes of Death.	Total.	Ages.																Sex.			Months.											
		Under 0-1.	1	2	3	4	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over	Not Stated.	Male.	Female.	Not Stated.	January.	February.	March.	April.	May.	June	July.	August	September.	October.	November.	December.
Totals	2 238	595	64	31	26	22	45	36	58	240	171	148	153	217	193	193	36	1,273	962	3	196	199	179	161	203	206	167	189	204	188	176	170
I (*A.*) General (Epidemic) Diseases	199	41	13	8	8	8	14	8	13	36	19	11	4	3	5	4	4	118	81	..	19	14	13	8	12	13	16	23	20	23	14	24
I (*B*) Other General Diseases	352	12	1	2	3	1	5	6	16	71	53	47	52	44	23	13	3	160	192	..	30	28	19	39	38	31	30	31	26	29	21	27
II. Diseases of Nervous System	236	58	9	5	6	1	8	7	3	5	12	13	14	39	29	25	2	122	114	..	20	27	16	15	22	19	20	17	20	18	26	16
III. Diseases of Circulatory System	141	5	....	....	....	1	2	4	4	9	11	9	20	31	31	13	1	72	69	..	10	11	13	11	17	11	11	10	12	12	14	9
IV. Diseases of Respiratory System	251	48	21	9	6	3	3	3	5	18	14	23	20	35	19	21	1	145	106	..	30	31	38	24	28	26	6	8	10	7	16	27
V. Diseases of Digestive System	210	101	13	3	2	2	7	3	4	12	10	11	10	13	14	3	2	124	86	..	11	10	8	11	9	8	16	36	47	28	17	9
VI. Diseases of Genito-Urinary System	78	4	1	1	....	1	1	2	3	5	4	7	9	24	14	2	....	45	33	..	4	6	6	3	12	6	6	4	9	8	10	4
VII. The Puerperal State	14	....	....	....	....	....	....	....	1	7	3	3	....	....	....	....	....	.....	14	..	....	1	....	4	1	1	..	1	2	2	1	1
VIII. Diseases of Skin	18	2	....	....	....	....	....	....	....	1	....	2	2	2	4	4	1	9	9	..	2	1	3	..	1	3	1	2	1	1	2	1
IX. Diseases of Locomotor System	2	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	2	....	..	....	....	....	....	....	1	....	1	....	....	....	....
X. Malformations	6	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	3	..	....	....	1	..	2	....	....	....	....	1	1	1
XI. Early Infancy	165	165	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	102	62	1	12	16	10	11	16	20	14	13	17	13	10	13
XII. Old Age	141	....	....	....	....	....	....	....	....	....	....	....	....	4	42	94	1	59	82	..	23	29	18	10	13	14	4	9	4	8	8	15
XIII. Violence and other External Causes	192	3	2	1	1	1	4	3	8	71	36	17	10	9	....	7	19	179	13	..	12	8	15	11	7	32	26	15	13	15	19	19
XIV. Ill-defined diseases	102	29	4	1	....	1	1	....	1	5	9	5	12	13	12	7	2	53	52	..	9	9	12	5	13	5	5	7	15	10	5	7
XV. Still Births	131	131	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	81	48	2	11	8	10	9	12	16	12	13	7	13	11	6

TABLE

Showing Total Deaths by Individual

Causes of Death.	Total.	Algoma.	Brant.	Bruce.	Carleton.	Dufferin.	Elgin.	Essex.	Frontenac.	Grey.	Haldimand.	Haliburton.	Halton.	Hastings.	Huron.	Kent.	Lambton.
I. GENERAL DISEASES.																	
(*A. Epidemic Diseases.*)																	
Grand Total	33,502	566	588	776	1,811	256	550	774	706	837	240	84	263	851	726	801	770
Group Total	1,948	66	41	41	101	21	26	47	25	47	15	5	8	53	28	49	47
1. Typhoid Fever	520	17	8	9	41	1	6	19	7	5	1	..	1	15	10	9	18
2. Malarial Fever	7	....	....	..	....	..	..	....	1	....	..	..	..	....	..	....	....
3. Smallpox	4	....	....	....	....	..	..	2	....	....	..	..	..	....	1	....	....
4. Measles	166	5	4	2	4	1	4	3	1	4	2	..	..	3	....	7	3
5. Scarlet Fever	102	1	1	2	2	..	..	....	1	1	..	..	..	4	2	1	5
6. Whooping Cough	214	1	12	4	4	5	6	9	1	8	5	1	3	4	....	6	5
7. Diphtheria and Croup	380	16	4	6	12	1	4	6	6	6	4	3	1	12	4	9	4
8. Influenza	335	10	5	11	11	11	3	5	6	17	1	1	3	12	6	6	7
9. Dysentery	120	14	2	4	22	2	2	2	....	2	..	..	..	2	3	11	1
10. Erysipelas	87	2	4	3	4	..	1	1	1	4	2	..	..	1	2	....	4
11. Other Epidemic Diseases	13	....	1	....	1	..	..	....	1	....	..	..	..	....	....	....	....
(*B. Other General Diseases.*)																	
Group Total	5,110	71	100	132	273	38	63	117	125	132	45	10	25	116	123	113	127
12. Septicæmia	210	5	3	7	10	2	2	7	2	3	2	..	..	4	3	4	8
13. Tuberculosis of lungs	1,313	29	36	38	97	2	10	43	28	37	9	6	7	38	31	33	33
14. Tuberculosis of larynx	16	....	....	....	5	..	..	....	2	....	..	..	1	....	....	....	....
15. Tuberculous meningitis	136	3	3	1	6	2	..	3	1	3	..	1	..	2	2	4	2
16. Abdominal tuberculosis	24	....	1	....	1	..	..	4	1	1	..	..	..	....	....	1	....
17. Pott's disease	11	....	....	....	....	..	..	....	1	....	..	..	..	....	1	....	3
19. White swelling	13	1	....	2	....	..	..	....	1	....	..	..	..	1	....	1	1
20. Tuberculosis of other organs	60	1	....	3	12	3	..	1	1	....	..	..	..	....	....	....	1
21. General tuberculosis	952	11	14	22	33	4	10	15	37	20	1	..	4	13	16	20	18
22. Scrofula	5	....	....	....	1	..	..	....	....	....	..	..	..	1	....	....	1
23. Venereal diseases	19	1	....	....	3	..	..	....	1	1	..	..	1	....	....	....	1
24. Cancer of mouth	21	....	1	1	5	..	..	....	1	....	..	..	..	....	2	....	1
25. Cancer of stomach and liver	420	2	6	14	25	4	8	9	6	14	4	..	2	9	16	8	11
26. Cancer of intestines	54	....	1	2	3	3	3	1	....	2	..	..	..	....	1	....	....
27. Cancer of genital organs	42	....	....	....	....	1	..	....	1	....	..	..	..	2	3	....	3
28. Cancer of breast	58	2	1	1	1	..	1	....	1	1	1	..	1	3	....	....	1
29. Cancer of skin	40	..	1	1	1	1	..	1	1	1	1	..	..	2	....	....	2
30. Cancer of other unspecified organs	694	8	11	14	27	4	12	15	19	19	13	..	5	22	13	18	15
31. Tumors	60	1	....	1	1	..	2	3	3	3	..	1	..	2	3	4	....
32. Rheumatism	173	1	4	2	6	3	2	3	3	5	2	2	..	....	1	5	5
33. Diabetes	223	....	2	5	10	4	..	4	7	4	4	..	2	5	6	6	9
34. Anæmia, leukæmia	436	2	13	18	20	5	12	5	8	16	7	..	2	10	22	7	10
35. Alcoholism	55	4	2	....	3	..	..	1	....	....	..	..	..	....	....	2	1
36. Chronic poisonings	2	....	....	....	....	..	..	....	....	....	..	..	..	....	....	....	....
37. Other general diseases	73	....	1	....	3	..	1	2	....	2	1	..	..	2	3	....	1
II. DISEASES OF NERVOUS SYSTEM.																	
Group Total	3,806	44	70	92	150	32	92	96	105	105	30	13	50	91	101	101	90
38. Encephalitis	70	3	....	3	2	1	3	2	1	1	..	..	..	3	1	4	1
39. Meningitis	539	9	13	10	23	3	5	20	8	11	..	2	5	12	8	15	18
40. Locomotor ataxia	26	....	....	....	5	..	..	1	1	....	..	..	..	....	....	....	....
41. Other diseases of spinal cord	48	....	....	1	6	1	..	1	2	3	1	..	1	2	4	....	2
42. Apoplexy	1,044	8	31	31	40	14	12	33	17	28	11	..	23	31	35	36	30
43. Softening of Brain	51	3	....	....	4	..	..	....	1	1	1	1	1	2	2	....	2
44. Paralysis	1,021	5	14	21	40	8	38	22	52	36	11	2	13	13	27	30	18
45. General paralysis of insane	5	....	....	....	....	..	..	....	....	....	..	..	..	....	....	....	....
46. Other forms of mental disease	45	....	....	1	....	..	..	....	4	2	..	1	..	2	....	....	....
47. Other diseases of brain	80	....	....	....	4	1	6	1	1	1	..	..	..	....	2	....	3
48. Epilepsy	120	2	....	2	3	..	3	....	4	2	..	1	1	6	3	2	6
49. Convulsions	569	11	11	14	19	4	21	13	10	14	6	5	6	14	10	14	7
50. Tetanus	18	....	....	....	1	..	..	2	....	1	..	..	..	....	....	....	....
51. Other diseases of nervous system	179	3	1	9	3	..	4	1	4	5	..	1	..	6	9	6	3

No. 10.

Diseases in each County in Ontario, 1907.

Lanark.	Leeds and Grenville.	Lennox and Addington.	Lincoln.	Middlesex.	Muskoka.	Nipissing.	Norfolk.	Northumberland and Durham	Ontario.	Oxford.	Parry Sound.	Peel.	Perth.	Peterborough.	Prescott and Russell.	Prince Edward.	Rainy River.	Renfrew.	Simcoe.	Stormont, Dundas and Glengarry.	Thunder Bay.	Victoria.	Waterloo.	Welland	Wellington.	Wentworth	York.	Numbers.
480	877	308	450	3,365	238	845	348	869	507	714	355	270	569	507	811	268	383	644	1,113	950	405	449	681	521	684	1,419	5,783	
24	26	16	19	36	7	82	25	31	30	33	20	7	19	24	64	7	61	62	73	39	51	25	6	53	20	53	381	
7	10	2	6	5	2	41	2	10	4	6	14	..	5	9	14	3	44	16	17	12	19	4	7	11	5	11	67	1
..	....	..	....	....	....	....	....	....	....	....	....	....	1	..	....	....	....	1	2	....	....	....	....	1	....	....	1	2
....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3
2	....	1	1	5	....	5	5	2	6	4	..	..	1	3	11	..	2	5	8	4	1	3	9	3	..	3	39	4
....	1	....	....	2	1	1	....	....	5	2	..	..	..	..	1	..	2	4	2	....	2	..	....	1	3	5	48	5
2	1	....	....	5	1	3	2	2	2	10	3	..	3	4	1	..	1	..	20	4	11	4	8	..	4	4	45	6
7	3	2	5	3	2	21	10	2	....	2	2	1	3	1	15	..	7	20	12	9	8	3	21	2	1	12	103	7
3	9	10	7	8	....	3	2	10	12	8	..	5	1	6	20	4	1	16	10	8	....	9	9	7	5	5	42	8
2	1	1	....	3	1	4	....	3	....	....	1	..	3	..	4	..	4	..	2	2	1	..	2	..	....	6	33	9
1	....	....	....	5	....	4	2	1	1	1	..	1	..	....	....	....	....	....	....	....	7	2	4	..	1	7	21	10
....	....	....	....	....	....	....	2	1	....	....	..	..	..	1	....	....	....	....	....	....	2	..	....	1	1	....	2	11
83	167	50	57	213	45	66	46	137	82	146	42	41	92	82	96	37	29	63	167	188	55	79	107	65	123	197	945	
1	1	1	3	14	1	5	1	1	2	7	4	3	2	2	5	1	1	5	2	9	2	..	5	3	9	7	51	12
14	54	16	15	56	21	23	7	31	25	33	8	11	20	24	18	7	2	6	20	11	26	34	25	24	31	59	218	13
1	2	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	3	14
...	4	....	4	3	2	1	2	3	....	4	..	1	3	2	....	..	1	3	6	5	4	3	2	..	1	10	39	15
....	1	....	....	....	2	....	....	....	....	....	....	....	....	2	....	..	....	1	2	1	....	1	....	..	1	3	1	16
....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	17
....	....	....	....	....	....	....	....	1	....	2	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	2	....	19
....	1	1	....	....	....	....	....	2	....	1	..	..	1	..	2	..	....	..	1	8	....	..	1	..	....	....	20	20
24	34	7	7	44	8	13	4	26	12	15	8	5	8	16	39	6	17	27	43	74	14	13	20	5	6	12	197	21
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	22
....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	..	....	....	....	1	8	23
....	....	....	....	....	....	....	....	1	....	1	....	....	....	1	....	....	....	....	1	1	....	....	....	....	....	3	2	24
5	9	5	4	13	2	3	3	8	10	14	4	4	9	8	11	4	1	4	16	16	1	1	14	4	15	19	75	25
3	3	....	....	1	....	....	1	....	....	1	....	....	....	1	....	1	....	....	....	2	....	1	5	1	2	4	12	26
1	1	....	....	....	....	....	....	....	....	....	....	....	1	3	....	2	....	..	1	1	....	....	....	..	5	5	12	27
1	....	1	1	1	....	....	....	1	1	4	..	..	2	1	....	2	....	1	3	1	....	..	3	1	2	5	12	28
....	2	2	1	2	....	....	1	2	....	4	....	....	1	....	....	....	....	....	....	2	....	1	....	....	....	3	8	29
8	18	12	10	37	....	4	12	29	11	28	8	6	21	6	10	7	1	5	29	19	3	10	10	8	23	21	123	30
1	4	1	3	4	2	....	....	....	....	1	....	....	2	..	1	....	....	1	1	3	....	..	1	3	1	1	6	31
3	7	....	....	7	....	4	4	8	8	5	1	..	5	3	5	1	1	3	7	7	....	3	3	5	4	3	32	32
6	6	3	3	9	3	5	4	7	3	3	1	3	6	2	2	3	2	2	11	7	2	6	3	4	5	3	41	33
12	19	1	5	17	2	2	4	11	10	20	4	7	8	8	3	2	....	2	15	20	2	6	12	6	11	18	52	34
....	....	....	1	1	....	4	1	3	....	....	1	....	1	....	1	....	3	1	....	....	5	..	2	..	1	4	14	35
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	36
3	1	....	....	4	1	1	2	2	....	3	3	1	3	2	....	1	..	2	7	....	1	..	1	1	3	3	12	37
60	106	42	53	185	27	48	54	120	51	110	24	28	71	41	61	39	26	60	121	88	32	68	89	60	68	182	630	
2	2	1	....	4	....	3	....	1	....	1	1	..	..	..	7	1	1	2	2	4	....	2	2	3	2	..	4	38
8	12	3	10	22	5	14	2	12	6	9	4	6	10	2	14	2	6	8	18	12	10	8	11	5	9	28	121	39
....	....	....	....	2	..	....	1	1	....	3	..	..	..	..	....	1	....	1	1	2	....	....	....	....	....	....	2	5	40
....	....	2	....	1	....	2	2	....	3	....	..	1	3	..	....	....	....	....	2	....	....	1	1	....	....	1	5	41
16	31	13	16	32	6	4	23	46	16	36	3	5	17	11	10	12	4	8	24	17	4	15	34	12	21	53	181	42
1	1	....	....	1	..	....	1	4	....	4	..	..	3	1	....	....	....	1	3	3	....	2	1	..	1	1	5	43
20	35	13	18	63	6	9	13	36	12	35	4	9	16	5	24	14	2	21	29	30	2	25	15	26	17	49	123	44
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	45
....	3	....	1	2	1	....	....	1	....	1	..	..	..	1	....	..	....	1	....	4	....	....	....	....	....	8	12	46
....	4	2	1	12	....	2	....	3	....	3	2	3	..	2	1	..	....	1	....	1	1	1	1	2	2	2	15	47
....	4	....	....	14	....	....	1	2	3	8	..	..	3	2	2	1	....	..	14	....	....	2	3	1	1	8	16	48
11	12	8	6	23	7	13	8	7	11	8	10	4	15	13	3	5	13	11	20	6	15	10	17	11	9	20	94	49
....	1	....	....	1	....	....	1	....	....	....	....	....	....	2	....	..	....	....	....	....	....	....	....	....	....	....	2	7	50
2	1	....	1	8	2	1	2	7	....	2	..	..	4	2	....	3	....	6	8	9	....	2	4	..	6	8	37	51

TABLE

Showing Total Deaths by Individual

Causes of Death.	Total.	Algoma.	Brant.	Bruce.	Carleton.	Dufferin.	Elgin.	Essex.	Frontenac.	Grey.	Haldimand.	Haliburton.	Halton	Hastings.	Huron.	Kent.	Lambton.
III. DISEASES OF CIRCULATORY SYSTEM.																	
Group Total	2,666	18	42	71	141	23	39	63	41	74	19	4	25	65	61	78	59
52. Pericarditis	21	2	1	1	2	1	..	2	1	....	..	..	1	1	....	1	....
53. Endocarditis	266	1	2	11	44	4	2	10	2	5	2	..	..	2	9	3	1
54. Heart Disease	1,864	12	31	54	75	16	34	38	34	57	12	4	19	53	38	67	40
55. Angina Pectoris	75	....	....	1	3	..	2	....	1	....	..	..	1	3	7	....	1
56. Diseases or Arteries	270	1	7	2	13	..	.	10	2	6	4	..	1	2	6	3	9
57. Embolism and Thrombosis	76	1	....	1	6	2	..	....	1	1	..		2	2	1	....	3
58. Diseases of Veins	9	1	1	....	....	..	..	....	....	1	..	..	..	1	....	....	....
59. Diseases of Lymphatics	2	....	....	1	....	..	..	....	....	....	....	....	....	....	....	....	....
60. Other Diseases of Circulatory System	82	....	....	....	3	..	1	3	3	4	1	..	1	1	....	4	5
IV. DISEASES OF RESPIRATORY SYSTEM.																	
Group Total	1,265	61	73	79	189	46	51	95	75	131	27	11	43	133	112	110	96
61. Diseases of Larynx	40	3	....	3	....	..	..	....	....	2	..	..	..	....	1	2	....
62. Diseases of the Thyroid Body	8	1	1	....	....	..	..	....	....	....	....	....	....	....	....	....	....
63. Acute Bronchitis	427	7	6	5	12	3	5	3	2	26	3	..	2	4	8	2	11
64. Chronic Bronchitis	236	1	4	11	14	7	3	1	7	22	4	..	2	12	9	5	4
65. Broncho-pneumonia	498	5	13	5	32	3	..	12	3	9	4	..	5	14	12	10	7
66. Pneumonia	2,561	41	40	44	111	23	34	65	58	65	14	9	22	85	64	69	64
67. Pleurisy	88	1	....	1	2	3	..	....	1	4	..	..	1	4	5	....	4
68. Congestion of Lungs	153	....	5	3	9	6	7	3	1	6	..	2	7	7	4	3	....
69. Gangrene of Lungs	6	....	....	....	....	..	..	....	....	....	....	....	....	....	....	....	....
70. Asthma and Emphysema	124	1	4	1	6	1	1	6	1	1	2	..	2	3	7	7	3
71. Hemorrhage of Lungs	37	1	....	2	2	..	1	2	....	1	..	..	1	1	....	5	....
72. Other Diseases of the Respiratory System, phthisis excepted	84	3	....	4	1	..	..	3	2	1	..	..	1	3	....	7	3
V. DISEASES OF DIGESTIVE SYSTEM.																	
Group Total	2 993	48	52	77	229	14	38	58	44	71	15	3	22	80	56	69	56
73. Diseases of Mouth	4	....	1	....	....	..	..	....	....	....	....	....	....	....	....	....	....
74. Tonsilitis	27	....	....	1	....	1	1	....	....	1	1	....	....	1	....	1	....
75. Other Diseases of Pharynx	13	....	....	2	....	..	..	....	....	4	..	..	..	1	....	....	....
76. Ulcer of the Stomach	39	2	....	1	....	..	..	....	....	1	..	..	..	4	....	3	....
77. Gastritis	218	13	10	6	11	2	4	3	5	4	1	..	1	13	7	1	2
78. Other Diseases of the Stomach	353	1	....	18	7	..	4	3	3	11	2	..	1	4	7	10	10
79. Dentition	7	....	....	....	....	..	..	....	....	....	....	....	....	....	....	....	....
80. Diarrhœa and Enteritis (under 2 years)	1,036	14	15	13	128	1	7	22	19	15	7	3	6	28	7	21	21
81. Diarrhœa and Enteritis (2 years and over)	248	4	1	3	8	1	5	7	2	7	1	..	..	7	6	9	6
82. Hernia	50	1	1	3	4	1	2	2	....	2	1	..	..	1	2	....	1
83. Obstruction of Intestines	186	3	10	9	12	3	..	4	2	16	..	..	2	4	6	4	1
84. Other Diseases of Intestines	76	....	1	5	6	..	1	1	2	2	1	..	2	2	1	1	2
85. Acute Yellow Atrophy of Liver	5	....	....	....	....	..	..	....	....	....	....	..	1	....	....	....	....
86. Hydatid Tumors of Liver	1	....	....	....	....	..	..	....	....	....	....	....	....	....	....	....	....
87. Cirrhosis of Liver	93	....	3	4	6	2	3	3	3	3	..	..	..	2	7	1	2
88. Biliary Calculi	34	....	....	....	2	..	..	....	....	....	....	....	....	2	1	....	....
89. Other Diseases of Liver	124	....	4	....	4	1	5	4	1	2	..	..	3	3	4	5	5
90. Diseases of Spleen	2	....	....	....	....	..	..	....	....	....	....	....	....	....	....	....	....
91. Peritonitis, non-puerperal	250	3	1	6	22	2	3	5	5	6	1	..	3	5	3	5	5
92. Appendicitis	197	7	5	6	19	..	3	4	2	3	..	.	3	3	5	7	1
93. Other Diseases of the Digestive System (Cancer and Tuberculosis excepted)	4	....	....	....	....	..	..	....	....	....	....	....	....	....	....	1	....
VI. DISEASES OF GENITO-URINARY SYSTEM.																	
Group Total	1,387	7	10	40	78	19	35	32	31	30	17	4	14	23	48	33	51
94. Acute Nephritis	89	1	....	1	2	2	..	3	1	2	..	..	1	3	4	4	4
95. Bright's Disease	888	2	7	17	56	14	25	20	19	18	16	2	8	11	29	17	36
96. Other Diseases of Kidneys	136	3	....	8	4	1	6	4	5	2	..	2	..	4	7	2	2
97. Calculi of Urinary Tract	33	....	....	3	2	1	..	1	2	....	..	..	2	1	....	1	....
98. Diseases of Bladder	121	1	1	3	2	1	1	3	3	5	1	..	2	....	5	6	2
99. Diseases of Male Genital Organs (non-venereal)	6	....	....	....	....	..	..	....	....	....	....	....	....	....	....	....	....

No. 10.—*Continued.*

Diseases in each County in Ontario, 1907.—*Continued.*

Lanark.	Leeds and Grenville.	Lennox and Addington.	Lincoln.	Middlesex.	Muskoka.	Nipissing.	Norfolk.	Northumberland and Durham.	Ontario.	Oxford.	Parry Sound.	Peel.	Perth.	Peterborough.	Prescott and Russell.	Prince Edward	Rainy River.	Renfrew.	Simcoe.	Stormont, Dundas and Glengarry.	Thunder Bay.	Victoria.	Waterloo.	Welland.	Wellington.	Wentworth.	York.	Numbers.
29	70	18	42	139	16	31	29	75	56	67	41	18	45	51	37	29	18	30	76	48	17	27	66	21	73	111	551	
....	....	....	1	....	....	1	....	1	....	....	....	..	..	..	..	..	..	..	....	....	....	..	....	..	....	3	2	52
....	15	1	3	8	2	2	....	4	2	1	10	1	8	2	4	1	....	1	8	2	1	6	2	3	1	9	71	53
28	46	13	31	91	13	25	27	55	45	55	17	16	25	14	31	26	13	28	57	41	11	18	49	14	49	74	340	54
....	....	1	2	4	....	....	1	4	....	1	..	..	..	2	1	..	....	..	....	1	1	1	1	1	4	3	29	55
....	5	1	2	24	....	....	....	8	8	8	8	1	6	7	....	1	1	..	8	2	1	1	7	..	14	14	77	56
....	1	1	1	8	1	1	....	1	1	....	2	..	3	1	....	..	1	..	2	1	1	1	2	2	4	2	19	57
....	....	....	....	....	....	....	....	....	....	....	..	..	..	..	....	..	....	..	....	1	....	..	2	..	....	....	2	58
....	....	....	....	....	....	....	....	....	....	....	..	..	..	..	....	..	....	..	....	....	....	..	....	..	....	....	1	59
1	3	1	2	4	....	2	1	2	....	2	4	..	3	1	1	1	3	1	1	....	2	..	3	1	1	6	10	60
63	105	36	64	188	30	113	43	99	71	87	47	40	97	72	90	28	35	72	126	117	54	51	74	58	88	235	747	
....	1	1	....	2	1	1	....	....	1	....	..	..	2	2	1	..	....	..	2	1	2	..	3	..	....	1	8	61
....	1	....	....	....	....	....	....	....	....	....	..	..	..	1	....	..	....	1	1	....	....	..	....	..	....	....	1	62
6	10	2	10	24	7	18	6	14	9	7	7	3	7	19	13	2	3	13	19	8	5	5	7	8	7	23	72	63
2	1	....	....	14	....	1	1	4	3	2	..	3	8	1	....	1	....	5	11	5	1	1	4	2	2	9	49	64
3	6	....	4	16	2	21	6	12	12	7	3	4	17	8	5	2	3	..	9	4	10	9	13	5	17	40	122	65
46	69	28	43	109	15	59	26	57	40	62	29	25	53	38	63	20	24	47	70	79	33	29	39	39	49	140	425	66
3	3	8	....	5	1	1	....	2	....	2	..	..	2	..	1	1	3	3	2	2	....	1	3	2	4	4	14	67
..	2	1	4	4	1	3	....	3	3	1	3	1	3	1	4	2	....	..	2	4	....	..	2	1	4	8	33	68
....	2	....	....	2	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	69
1	8	....	1	7	....	1	3	7	1	3	1	3	3	..	2	..	1	2	3	3	1	6	1	..	1	2	17	70
....	1	....	2	3	....	..	....	....	1	....	1	..	1	1	....	..	....	1	3	....	....	..	2	..	1	2	2	71
2	1	1	....	2	3	7	1	....	1	1	3	1	1	1	1	..	1	..	4	11	2	..	....	1	3	5	3	72
53	63	16	49	95	18	100	21	56	37	38	25	15	51	48	93	23	26	63	77	103	73	20	57	18	42	115	633	
....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	1	73
....	....	....	....	1	....	....	....	1	....	....	....	....	....	2	....	1	1	..	3	....	1	..	1	3	....	....	6	74
....	....	....	....	1	....	1	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	1	75
....	4	....	1	1	....	....	....	1	1	..	....	2	....	1	....	....	2	....	2	....	....	....	....	....	2	5	6	76
4	3	1	4	4	6	2	....	3	2	....	1	..	..	3	1	..	1	2	4	2	3	..	2	2	1	2	80	77
14	23	6	4	9	2	8	6	13	11	7	2	1	8	10	7	3	4	10	16	16	11	2	12	5	4	12	46	78
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	2	1	....	....	....	....	....	....	1	79
9	13	1	18	25	3	60	6	10	4	5	11	3	5	12	56	3	11	31	19	37	45	4	16	14	13	41	254	80
4	4	3	3	8	3	7	1	6	3	....	1	2	10	3	12	6	3	4	3	11	1	6	6	6	5	16	44	81
....	1	1	1	1	2	1	1	....	3	....	1	..	3	1	....	....	1	1	....	....	....	....	....	....	1	1	9	82
3	4	1	2	9	1	2	2	4	4	6	1	..	3	1	....	1	....	3	5	8	2	2	3	2	1	5	42	83
2	2	....	....	5	....	....	....	1	....	1	..	..	4	1	1	..	1	1	4	6	1	2	....	2	1	1	13	84
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	2	....	....	....	....	1	....	....	85
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	86
1	3	....	1	6	....	2	2	3	1	3	....	....	....	1	....	....	....	....	1	1	1	1	1	3	1	4	18	87
....	2	....	....	....	....	1	1	....	2	1	....	..	1	..	2	....	....	....	....	2	....	1	6	1	1	....	8	88
9	1	1	3	1	1	....	....	2	1	4	5	2	3	4	5	4	....	..	5	4	....	1	1	3	2	9	12	89
....	....	....	....	....	....	....	....	1	....	....	....	..	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	90
6	2	1	7	17	....	10	1	9	1	7	2	5	9	2	7	5	2	1	7	4	5	1	2	2	3	11	52	91
1	1	1	5	7	....	3	1	2	4	1	1	..	7	5	1	..	1	8	5	7	3	..	7	5	5	6	39	92
....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	1	....	1	93
20	46	23	15	85	10	19	24	29	12	37	11	14	19	18	23	5	6	12	49	35	8	19	25	26	35	65	225	
3	10	1	1	....	....	4	1	3	....	3	..	..	..	..	7	..	..	..	1	2	2	2	1	..	....	3	17	94
7	21	13	12	68	8	9	17	14	10	24	9	10	14	15	9	4	4	7	34	19	5	9	14	20	24	43	148	95
6	5	3	1	9	2	2	2	2	....	3	..	..	1	1	3	1	....	2	7	7	....	3	3	4	5	4	10	96
....	1	....	....	1	....	....	....	1	....	....	....	2	..	1	1	..	1	..	1	1	....	....	....	....	....	2	8	97
3	6	4	....	4	....	1	3	7	1	3	2	2	3	1	3	..	....	3	1	4	1	2	2	..	3	7	19	98
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	1	1	....	99

TABLE
Showing Total Deaths by Individual

Causes of Death.	Total.	Algoma.	Brant.	Bruce.	Carleton.	Dufferin.	Elgin.	Essex.	Frontenac.	Grey.	Haldimand.	Haliburton.	Halton.	Hastings.	Huron.	Kent.	Lambton.
VI. DISEASES OF GENITO-URINARY SYSTEM.—*Continued.*																	
100. Uterine Tumor	8	....	....	1	1	..	..	....	....	....	..	..	..	....	....	....	....
101. Other Diseases of Uterus	18	....	....	....	3	..	..	1	....	3	..	..	..	1	....	1	1
102. Ovarian Tumor	12	....	1	2	1	..	..	....	....	....	..	..	1	1	....	....	....
103. Diseases of the Tubes	3	....	....	....	....	..	..	....	....	....	..	..	..	....	....	....	..
104. Diseases of Female Genital Organs (non-venereal)	3	....	....	....	....	..	..	....	....	....	..	..	..	....	....	....	....
105. Other Diseases of the Genito-Urinary System	70	....	1	5	7	..	3	....	1	1	..	..	..	2	3	2	6
VII. THE PUERPERAL STATE. **Group Total**	233	7	3	3	15	..	..	4	4	6	2	3	..	8	2	5	5
106. Puerperal Septicæmia	48	1	2	....	4	..	..	....	....	....	1	..	..	3	1	1	2
107. Puerperal Convulsions	32	1	....	1	1	..	..	1	....	2	..	..	..	....	1	2	....
108. Other causes incident to child-birth	153	5	1	2	10	..	..	3	4	4	1	3	..	5	....	2	3
VIII. DISEASES OF SKIN. **Group Total**	202	3	3	3	6	..	5	2	6	6	1	1	1	4	....	5	8
109. Gangrene	136	3	3	....	5	..	5	1	6	6	1	1	1	3	....	3	5
110. Carbuncle	4	....	....	....	....	..	..	....	....	....	..	..	..	....	....	1	....
111. Abscess	33	....	....	2	....	..	..	....	....	....	..	..	..	1	....	....	1
112. Other Diseases of Skin	29	....	....	1	1	..	..	1	....	....	..	..	..	....	....	1	2
IX. DISEASES OF LOCOMOTOR SYSTEM. **Group Total**	39	....	1	....	11	..	1	....	1	....	..	..	..	....	....	....	....
113. Diseases of the Bones	31	....	1	....	5	..	1	....	1	....	..	..	..	....	....	....	....
114. Diseases of the Joints	1	....	....	....	....	..	..	....	....	....	..	..	..	....	....	....	....
115. Other Diseases of Locomotor System	7	....	....	....	6	..	..	....	....	....	..	..	..	....	....	....	....
X. MALFORMATIONS. **Group Total**	88	....	2	3	16	..	1	2	....	2	..	..	..	1	....	....	....
116. Congenital malformations (still-births excluded)	88	....	2	3	16	..	1	2	....	2	..	..	..	....	....	....	....
XI. EARLY INFANCY. **Group Total**	2,142	45	33	32	204	18	32	67	41	36	13	4	12	35	39	35	47
117. Premature Birth	709	6	15	8	73	3	10	23	15	11	8	1	9	3	14	15	24
118. Congenital Debility	1 433	39	18	24	131	10	22	44	26	25	5	3	3	32	25	20	23
119. XII. OLD AGE. **Group Total**	2,615	32	68	76	113	17	45	66	75	92	22	4	12	85	69	61	55
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES. **Group Total**	1.877	64	29	41	59	12	27	30	35	23	14	4	14	41	14	41	33
120. Suicides	136	2	....	4	9	3	1	3	2	2	1	..	2	2	1	....	3
121. Fractures and Dislocations	145	4	3	5	8	..	1	4	4	3	..	..	1	2	1	2	1
122. Burns and Scalds	133	6	5	2	5	2	3	2	2	2	1	..	1	6	1	2	2
123. Physical phenomena	46	2	1	1	4	..	..	....	2	....	..	..	..	2	....	1	....
124. Drowning	297	18	2	4	2	..	..	5	7	5	3	..	..	7	3	9	7
125. Inhalation of poisonous gases	34	1	....	1	....	..	..	....	1	....	1	..	..	....	....	1	....
126. Other accidental Poisonings	81	....	4	2	4	..	..	1	....	3	..	..	..	1	2	8	2
127. Other accidental Traumatisms	939	30	13	15	26	7	21	14	17	7	7	4	9	21	6	14	18
128. Injuries at Birth	38	....	1	6	1	..	1	....	....	....	1	..	1	....	....	3	....
129. Homicide	28	1	....	1	....	..	..	1	....	1	..	..	..	....	....	1	....
XIV. ILL-DEFINED DISEASES. **Group Total**	2,385	53	38	51	129	12	79	44	71	46	14	10	31	74	57	64	45
130. Dropsy	231	3	....	10	3	..	10	1	12	12	2	1	3	3	3	3	6
131. Heart Failure	1,144	15	25	27	53	8	34	19	31	18	9	2	12	42	29	37	30
132. Other Ill-Defined Causes	833	31	13	9	61	1	21	24	25	16	2	4	10	9	16	19	7
133. Unknown causes	177	4	....	5	12	3	14	2	3	....	1	3	6	20	9	5	2
134. XV. STILL BIRTHS. **Group Total**	1.746	41	23	35	94	9	16	51	24	36	6	8	6	42	16	37	51

No. 10.—*Concluded.*

Diseases in each County in Ontario, 1907.—*Concluded.*

Lanark.	Leeds and Grenville.	Lennox and Addington.	Lincoln.	Middlesex.	Muskoka.	Nipissing.	Norfolk.	Northumberland & Durham.	Ontario.	Oxford.	Parry Sound.	Peel.	Perth.	Peterborough.	Prescott and Russell.	Prince Edward.	Rainy River.	Renfrew.	Simcoe.	Stormont, Dundas and Glengarry.	Thunder Bay.	Victoria.	Waterloo.	Welland.	Wellington.	Wentworth.	York.	Number.	
....	....	....	....	1	....	....	....	....	....	....	..	..	..	..	....	..	....	.	....	....	....	1	2	..	....	....	2	100	
....	1	1	...	....	....	1	....	...	....	...	..	..	..	..	....	..	....	..	....	....	....	1	....	1	1	2	1	101	
....	....	....	1	....	....	....	....	....	....	....	..	1	..	..	....	..	....	..	....	1	....	..	....	..	1	1	1	102	
....	....	....	....	....	....	....	....	....	....	....	..	.	..	..	....	..	1	.	....	1	....	..	....	..	....	....	1	103	
....	....	....	....	....	....	2	....	....	....	....	..	.	..	..	....	..	....	..	1	...	....	..	..	..	....	....	....	104	
1	2	1	....	2	....	....	1	2	1	4	..	..	..	..	....	..	....	..	....	..	....	1	3	.	....	3	18	105	
2	5	2	....	6	2	14	4	4	5	4	7	..	3	5	13	1	1	9	9	10	5	3	2	1	4	12	33		
....	1	....	....	2	....	3	....	1	2	....	1	..	..	..	....	..	....	3	3	2	2	..	1	.	....	2	10	106	
....	1	....	....	1	....	1	....	....	1	....	..	..	1	..	....	..	....	2	1	3	....	..	....	.	1	2	9	107	
2	3	2	...	3	2	10	4	3	2	4	6	..	2	5	13	1	1	4	5	5	3	3	1	1	3	8	14	108	
2	7	....	2	13	4	....	2	13	6	7	1	..	2	5	5	4	....	3	9	6	1	..	7	4	3	9	33		
2	5	....	2	9	2	....	1	9	5	6	1	..	2	3	1	4	....	..	3	3	....	.	4	..	1	6	24	109	
....	....	....	....	....	....	....	....	....	1	....	..	..	..	..	....	..	....	.	....	....	....	..	....	..	....	....	2	110	
....	1	....	....	3	1	....	....	3	....	1	..	..	..	..	....	..	....	1	3	2	....	..	2	1	....	1	7	111	
....	1	....	....	1	1	....	1	1	....	....	..	..	..	2	4	.	....	2	3	1	1	..	1	..	2	2	....	112	
....	....	....	....	....	....	....	....	....	....	3	1	1	1	2	....	..	1	1	1	1	1	..	1	.	....	3	8		
....	....	....	....	....	....	....	....	....	....	3	1	1	1	2	....	..	1	1	1	1	1	..	....	.	....	3	7	113	
....	....	....	....	....	....	....	....	....	....	....	..	..	..	..	....	..	....	..	....	....	....	.	1	.	....	....	....	114	
....	....	....	....	....	....	....	....	....	....	....	..	..	..	..	....	..	....	..	....	....	....	..	..	..	....	....	1	115	
1	....	1	1	8	1	2	2	2	3	1	..	..	..	..	....	..	1	..	....	....	....	..	....	2	3	8	25		
1	....	1	1	8	1	2	2	2	3	1	..	..	..	..	....	..	1	..	....	....	....	..	....	2	3	8	25	116	
13	43	13	28	57	11	81	9	26	30	28	26	11	21	31	103	17	21	66	95	77	34	35	33	30	58	92	365		
1	17	4	14	18	5	13	2	13	8	13	8	7	8	5	8	3	4	10	33	5	12	15	15	8	24	52	131	117	
12	26	9	14	39	6	68	7	13	22	15	18	4	13	26	95	14	17	56	62	72	22	20	18	22	34	40	234	118	
43	92	42	49	82	14	21	33	123	39	45	11	43	60	29	56	36	10	62	117	107	10	52	68	46	74	91	268	119	
11	36	14	14	66	16	140	16	51	25	32	46	26	20	25	20	12	121	39	52	31	100	19	28	45	34	65	292		
...	8	1	2	4	....	5	1	5	1	3	2	2	2	....	1	....	2	1	3	1	1	5	5	1	2	43	120		
1	4	...	....	4	....	7	1	6	2	2	3	..	3	4	...	..	6	..	5	1	21	2	4	3	5	8	14	121	
....	1	1	1	6	....	9	2	1	1	2	2	.	1	1	3	2	1	6	3	6	2	2	2	1	....	3	29	122	
....	....	....	1	1	1	5	....	4	2	....	.	1	..	.	..	1	....	5	1	....	2	1	....	1	....	1	6	123	
2	6	3	2	4	6	32	3	3	3	....	14	2	2	6	4	.	11	6	11	5	20	1	8	9	6	5	51	124	
....	....	....	....	1	....	....	....	1	....	6	..	..	1	.	....	..	....	..	....	....	....	..	1	.	....	2	17	125		
....	1	....	1	7	....	4	....	5	....	....	..	..	1	2	3	..	2	2	2	1	2	..	....	1	1	1	18	126	
8	12	9	7	36	9	72	7	19	14	16	25	21	10	12	8	7	95	22	28	15	52	12	8	25	20	34	107	127	
....	....	....	....	1	....	2	2	3	1	3	..	..	..	..	1	1	....	..	1	....	....	..	....	..	1	5	3	128	
....	4	....	....	2	....	4	....	1	1	....	..	..	..	..	1	..	1	1	...	....	....	.	....	..	....	4	4	129	
46	76	29	36	133	21	81	22	62	25	42	30	24	44	37	109	24	22	53	80	69	27	20	35	60	29	71	260		
11	5	6	1	17	....	8	2	5	1	8	2	1	6	5	11	3	1	6	9	8	1	2	8	13	2	6	11	130	
26	57	17	26	58	12	17	15	137	16	25	13	13	29	21	17	17	4	29	44	37	20	13	16	36	16	36	88	131	
5	8	5	5	54	6	48	5	19	8	9	5	6	6	8	68	4	7	15	26	24	6	3	11	11	9	27	157	132	
4	6	1	4	4	3	8	....	1	....	....	10	4	3	3	13	..	10	3	1	....	....	2	....	..	2	2	4	133	
30	35	6	21	59	16	47	18	41	35	34	23	2	21	31	41	6	5	49	61	31	17	31	29	22	30	110	397	134	

TABLE No. 11.

Table Showing Total Deaths by Individual Diseases in Each City in Ontario, 1907.

Causes of Death.	Totals.	Belleville.	Brantford.	Chatham.	Fort William.	Guelph.	Hamilton.	Kingston.	London.	Niagara Falls.	Ottawa.	Peterboro.	Port Arthur.	St. Catharines.	Stratford.	St. Thomas.	Toronto.	Windsor.	Woodstock.
I. GENERAL DISEASES																			
(*A. Epidemic Diseases*)																			
Grand Total	10,576	181	359	208	229	194	963	398	677	115	1,340	231	197	190	125	187	4,571	252	159
Group Total	633	11	26	19	18	7	36	12	18	4	81	8	29	5	10	5	320	16	8
1. Typhoid Fever	179	8	5	5	8	...	7	5	3	3	38	4	11	3	4	3	58	12	2
2. Malarial Fever	2	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
4. Measles	47	...	2	...	1	...	1	1	1	...	4	2	...	...	...	...	35	...	...
5. Scarlet Fever	60	...	1	...	...	2	4	1	2	...	2	..	2	...	1	...	45	...	...
6. Whooping Cough	77	..	10	2	4	1	1	1	2	...	4	...	6	...	2	1	37	1	5
7. Diphtheria and Croup	132	2	2	4	2	...	10	1	2	1	7	...	6	1	...	1	91	2	...
8. Influenza	52	1	2	...	...	3	3	2	3	...	5	2	...	1	1	...	28	...	1
9. Dysentery	45	...	1	8	1	...	4	...	1	...	19	...	...	...	2	...	9	...	...
10. Erysipelas	36	...	2	...	2	1	6	...	4	...	2	...	4	...	...	...	14	1	...
11. Other Epidemic Diseases	3	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
(*B. Other General Diseases*)																			
Group Total	1,631	31	60	30	22	44	125	78	110	19	202	34	24	26	13	19	715	41	38
12. Septicæmia	92	1	1	1	2	5	5	2	11	1	10	1	...	1	...	1	46	3	1
13. Tuberculosis of lungs	458	12	21	8	7	13	35	13	27	5	73	11	9	6	1	3	191	13	10
14. Tuberculosis of larynx	6	...	...	...	...	...	...	1	...	...	3	...	...	...	...	...	2	...	...
15. Tuberculous meningitis	57	1	3	1	3	..	7	1	1	...	3	1	1	1	...	...	31	2	1
16. Abdominal tuberculosis	7	...	...	...	...	1	2	1	...	...	...	...	...	...	...	...	...	3	...
17. Pott's disease	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...
19. White Swelling	3	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1
20. Tuberculosis of other organs	29	...	...	...	...	...	...	1	...	...	10	...	...	...	1	...	16	...	1
21. General Tuberculosis	204	1	8	5	2	1	11	22	20	3	17	4	7	3	1	3	86	7	3
22. Scrofula	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23. Veneral diseases	11	...	...	...	1	..	1	1	...	...	3	...	...	...	...	...	5	...	...
24. Cancer of mouth	13	...	...	...	...	...	3	1	...	...	5	1	...	...	...	...	2	...	1
25. Cancer of stomach and liver	137	3	4	2	..	5	14	2	6	1	18	2	1	1	2	4	66	3	3
26. Cancer of intestines	18	...	...	...	...	1	2	...	1	...	3	1	..	...	...	1	8	1	...
27. Cancer of genital organs	16	...	...	...	...	2	4	...	1	...	...	...	1	...	...	1	7	...	...
28. Cancer of breast	26	3	1	...	...	2	2	1	1	...	1	1	...	1	1	1	10	...	1
29. Cancer of skin	15	...	...	...	...	...	2	...	1	...	1	...	...	1	...	...	8	...	2
30. Cancer of other unspecified organs	230	5	9	7	2	5	16	16	19	4	22	4	1	6	1	2	103	3	5
31. Tumors	12	...	...	2	...	...	1	2	1	...	...	...	...	2	...	...	3	1	...
32. Rheumatism	47	..	1	2	...	1	1	1	6	4	2	1	...	...	1	1	24	1	1
33. Diabetes	66	1	2	...	..	2	2	6	4	...	7	1	2	1	1	...	36	...	1
34. Anæmia, leukæmia	132	3	8	2	1	5	9	5	12	1	18	4	1	2	3	3	45	4	6
35. Alcoholism	29	...	2	...	3	...	4	...	...	...	3	1	2	1	...	...	13	...	...
36. Chronic poisonings	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
37. Other General diseases	18	...	...	...	1	1	3	...	...	...	3	...	...	...	...	...	9	...	1
II. DISEASES OF NERVOUS SYSTEM.																			
Group Total	1,146	19	43	17	10	18	103	64	80	15	106	18	18	23	20	42	194	33	23
38. Encephalitis	12	...	...	...	...	...	...	...	2	2	2	...	...	...	...	2	3	...	1
39. Meningitis	195	...	10	2	3	3	21	6	...	2	21	1	5	6	2	4	101	7	1
40. Locomotor ataxia	25	...	...	...	...	...	2	...	14	...	3	...	...	...	...	...	5	...	1
41. Other diseases of spinal cord	15	...	...	...	...	...	2	...	1	...	5	...	...	...	2	...	5	...	...
42. Apoplexy	304	10	20	3	..	9	28	10	15	1	25	4	3	7	6	4	142	12	5
43. Softening of brain	11	1	...	...	...	...	...	...	1	...	1	1	...	...	1	2	2	...	2
44. Paralysis	271	1	4	9	2	3	27	35	27	5	28	2	...	5	5	13	91	8	6
45. General paralysis of insane	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...
46. Other forms of mental disease	12	...	...	...	...	...	3	1	...	...	1	...	...	...	...	...	7	...	...
47. Other diseases of brain	33	...	...	...	...	1	1	1	4	...	3	2	1	...	...	4	14	..	2
48. Epilepsy	25	2	...	...	...	1	2	1	1	...	2	1	...	...	1	2	9	...	3
49. Convulsions	182	3	8	2	5	1	13	6	12	5	13	4	9	5	3	10	75	6	2
50. Tetanus	13	1	...	...	...	...	2	...	1	...	1	2	...	...	...	...	6	...	...
51. Other Diseases of nervous system	43	1	1	1	...	...	2	4	2	...	1	1	...	...	...	1	29	...	...

TABLE No. 11.—*Continued.*

Cause of Death.	Totals	Belleville.	Brantford.	Chatham.	Fort William.	Guelph.	Hamilton.	Kingston.	London.	Niagara Falls.	Ottawa.	Peterboro.	Port Arthur.	St. Catharines.	Stratford.	St. Thomas.	Toronto.	Windsor.	Woodstock.
III. DISEASES OF CIRCULATORY SYSTEM.																			
Group Total	954	19	26	22	6	19	80	25	76	4	110	33	9	18	11	9	440	28	19
52. Pericarditis	8	...	...	...	...	...	2	1	...	...	2	...	...	1	...	...	1	1	...
53. Endocarditis	123	...	...	1	1	...	7	...	5	1	37	1	...	...	4	1	64	1	...
54. Heart Diseases	577	17	19	17	4	9	49	22	45	2	50	27	5	12	5	8	254	17	15
55. Angina Pectoris	38	1	...	...	...	1	3	...	1	...	3	1	1	2	...	...	26	...	1
56. Diseases of arteries	144	1	6	2	...	6	11	1	18	...	12	4	1	1	2	...	69	7	3
57. Embolism and thrombosis	34	...	...	...	...	3	2	1	5	1	6	...	1	...	...	...	15	...	...
58. Diseases of veins	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
59. Diseases of lymphatics	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
60. Other diseases of circulatory system	27	...	...	2	1	...	6	...	2	...	2	...	1	2	...	...	9	2	...
IV. DISEASES OF RESPIRATORY SYSTEM																			
Group Total	1,347	28	45	25	23	30	163	37	92	11	130	30	23	22	22	19	599	27	15
61. Diseases of larynx	12	...	...	1	...	...	1	...	1	...	...	...	2	...	1	...	6	...	...
62. Diseases of the thyroid body	3	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...
63. Acute bronchitis	115	...	3	1	2	2	16	...	10	2	8	9	2	4	1	3	51	1	...
64. Chronic bronchitis	81	3	2	1	...	...	6	1	9	...	11	1	2	...	1	1	43	...	...
65. Broncho-pneumonia	211	3	8	...	8	6	31	1	7	...	23	7	2	1	1	...	104	7	2
66. Pneumonia	792	14	25	18	12	20	93	33	54	8	85	12	14	13	15	12	341	15	10
67. Pleurisy	24	1	...	...	...	...	2	1	4	1	1	...	...	...	1	...	12	...	1
68. Cong of Lungs	52	5	3	1	...	1	6	1	1	...	4	...	...	2	1	3	24	...	...
69. Gangrene of lungs	3	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1	...	...
70. Asthma and Emphysema	37	1	3	3	...	...	2	...	2	...	4	...	1	...	1	...	14	4	2
71. Hemmorrhage of lungs	9	...	...	...	...	...	2	...	2	...	2	...	...	2	...	...	1	...	...
72. Other Diseases of Respiratory System phthisis excepted	8	1	...	...	1	1	1	...	...	...	...	...	...	...	...	...	1	...	...
V. DISEASES OF DIGESTIVE SYSTEM.																			
Group Total	1,102	15	38	18	38	11	78	32	48	9	175	23	33	22	11	17	513	21	9
73. Diseases of mouth	2	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
74. Tonsolitis	8	1	...	...	1	...	...	...	...	1	...	1	...	...	...	1	3	...	...
75. Other diseases of pharynx	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
76. Ulcer of Stomach	4	...	2	...	...	2	...	...	1	...	...	...	...	...	...	...	2	...	...
77. Gastritis	105	1	6	...	1	1	2	3	1	...	6	1	2	1	...	1	77	2	...
78. Other Diseases of the Stomach	49	...	...	1	3	...	6	...	5	...	6	4	8	...	2	...	12	1	1
80. Diarrhœa and enteritis, (under 2 years)	486	9	11	6	26	5	29	15	19	1	96	6	18	10	4	4	215	7	2
81. Diarrhœa and enteritis, (2 years and over)	70	...	...	3	1	1	9	1	1	...	6	1	...	1	1	2	40	3	...
82. Hernia	16	...	...	...	...	...	...	...	1	...	4	1	...	...	...	1	9	...	...
83. Obstruction of intestines	70	1	8	1	1	...	2	2	4	...	11	...	1	2	1	...	33	2	1
84. Other diseases of intestines	18	...	1	...	...	...	1	2	2	...	2	...	...	...	...	...	10	...	...
85. Acute yellow atrophy of liver	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
87. Cirrhosis of liver	40	...	1	1	1	...	4	3	1	2	6	1	...	...	...	3	16	1	...
88. Biliary calculi	6	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	3	...	1
89. Other diseases of liver	37	1	2	1	...	...	9	...	...	2	3	2	...	1	1	3	10	1	1
91. Peritonitis, non-puerperal	102	...	1	1	3	...	8	4	10	...	15	2	2	5	...	1	45	2	3
92. Appendicitis	89	...	4	2	1	3	5	2	2	2	19	4	2	2	2	1	36	2	...
93. Other diseases of the digestive system, (cancer and tuberculosis excepted)	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
VI. DISEASES OF GENITO-URINARY SYSTEM.																			
Group Total	445	4	5	9	2	11	46	23	52	6	60	10	6	7	6	7	182	7	2
94. Acute Nephritis	25	...	...	1	...	...	2	...	2	...	2	...	2	...	...	...	14	1	1
95. Bright's Disease	308	2	3	4	2	10	31	15	46	5	44	10	3	7	5	4	115	3	...
96. Other diseases of kidneys	22	...	...	2	...	...	2	3	1	1	3	...	...	...	...	...	9	1	...
97. Calculi of urinary tract	12	...	...	...	...	...	1	1	1	...	1	...	...	...	...	...	6	...	...
98. Diseases of bladder	31	...	1	1	...	...	4	3	1	...	...	...	...	1	...	1	15	2	1
100. Uterine tumor	4	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	2	...	...
101. Other diseases of uterns	9	1	...	1	...	1	2	...	...	...	3	...	...	...	...	...	1	...	...
102. Ovarian tumor	3	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	1	...	...
103. Diseases of the tubes	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
105. Other diseases of the genito-urinary system	30	1	1	...	...	...	3	1	...	...	5	...	...	...	...	3	16	...	...
VII. THE PUERPERAL STATE.																			
Group Total	61	2	2	3	4	...	11	...	1	...	8	2	...	...	...	...	28	...	...
106. Puerperal septicæmia	20	2	1	1	2	...	1	...	...	...	4	...	...	...	...	...	9	...	...
107. Puerperal convulsions	14	...	...	1	...	...	2	...	1	...	1	...	...	...	...	...	9	...	...
108. Other causes incident to child birth	27	...	1	1	2	...	8	...	...	...	3	2	...	...	...	...	10	...	...

TABLE No. 11.—*Concluded.*

Causes of Death.	Totals.	Belleville.	Brantford.	Chatham.	Fort William.	Guelph.	Hamilton.	Kingston.	London.	Niagara Falls.	Ottawa.	Peterboro.	Port Arthur.	St. Catharines.	Stratford.	St. Thomas.	Toronto.	Windsor.	Woodstock.
VIII. DISEASES OF SKIN.																			
Group Total	55	2	...	...	1	1	4	5	9	...	4	3	...	1	1	1	25	2	1
109. Gangrene	38	1	...	...	..	1	3	5	8	...	3	1	...	1	1	1	16	1	1
110. Carbuncle	2	...	...	...	...	...	...	..	...	...	...	...	...	...	..	...	2	...	..
111. Abscess	10	1	...	...	...	..	1	...	1	...	...	...	...	...	...	...	7	...	...
112. Other diseases of skin	5	...	...	...	1	...	...	...	..	...	1	2	...	...	...	...	...	1	...
IX. DISEASES OF LOCOMOTOR SYSTEM.																			
Group Total	26	...	1	...	1	...	3	1	...	...	10	1	...	...	...	1	7	...	1
113. Diseases of the bones	18	...	1	...	1	...	3	1	...	...	4	1	...	...	...	..	6	...	1
114. Diseases of the joints	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
115. Other diseases of locomotor system	7	...	...	...	...	...	...	...	..	...	6	...	...	...	...	...	1	...	...
X. MALFORMATIONS.																			
Group Total	46	...	1	...	...	2	3	...	7	...	11	...	2	1	...	1	18	...	...
116. Congenital malformation (still-births excluded	46	...	1	...	...	2	3	...	7	...	11	...	2	1	..	1	18	...	..
XI. EARLY INFANCY.																			
Group Total	750	6	26	5	18	12	76	26	35	11	168	12	7	19	5	12	288	17	7
117. Premature birth	281	...	14	3	7	7	42	13	12	3	59	1	3	11	1	5	90	7	3
118. Congenital debility	469	6	12	2	11	5	34	13	23	8	109	11	4	8	4	7	198	10	4
119. XII. OLD AGE.																			
Group Total	532	15	35	13	6	13	58	33	25	8	87	16	1	8	7	6	170	22	9
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																			
Group Total	580	10	16	11	56	11	45	20	37	15	44	12	31	9	4	13	229	12	5
120. Suicides	50	...	...	...	...	...	...	...	...	...	1	7	...	1	2	...	..	36	3	...
121. Fractures and dislocations	63	1	2	...	9	3	7	2	2	1	7	3	9	...	...	1	12	4	...
122. Burns and Scalds	47	2	2	...	...	...	3	1	4	...	3	1	2	...	1	2	26	...	...
123. Physical phenomena	18	2	1	1	2	...	...	1	1	1	4	...	...	1	...	...	4	...	...
124. Drowning	79	...	1	1	11	3	4	7	1	1	2	4	9	2	1	...	32	...	...
125. Inhalation of poisonous gases	20	...	...	...	...	...	1	1	1	...	...	...	...	...	...	...	17	...	...
126. Other accidental poisonings	31	1	4	4	2	...	1	...	4	..	1	1	...	1	...	...	12	...	...
127. Other accidental traumatisms	259	4	6	3	32	5	26	8	24	11	19	3	10	3	2	10	85	5	3
128. Injuries at birth	10	...	...	1	...	..	3	...	...	...	1	...	...	...	...	...	3	...	2
129. Homicide	3	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...
XIV. ILL-DEFINED DISEASES.																			
Group Total	586	14	17	21	16	7	46	29	57	10	70	14	6	1.	11	26	206	9	10
130. Dropsy	42	...	...	2	...	...	3	4	6	2	2	3	1	1	2	5	7	...	4
131. Heart failure	256	8	10	15	13	3	19	13	25	6	32	4	3	14	3	11	69	3	5
132. Other ill-defined causes	208	5	7	3	3	3	22	11	25	2	30	5	2	2	3	10	128	6	1
133. Unknown causes	20	1	...	1	...	1	2	1	1	...	6	2	...	...	3	...	2	...	...
134. XV. STILL BIRTHS.																			
Group Total	675	7	18	15	8	8	86	13	35	3	68	15	8	12	4	9	337	17	12

TABLE No. 12.

Table showing Total Deaths by Individual Diseases in each Town of over 5,000 population in Ontario, 1907.

Causes of Death.	Totals.	Barrie.	Berlin.	Brockville.	Collingwood.	Cornwall.	Galt.	Hawkesbury.	Kenora.	Lindsay.	Owen Sound.	Pembrook.	Sarnia.	Sault Ste. Marie.	Smiths Falls.	Toronto Junction.
I. GENERAL DISEASES.																
(*A. Epidemic Diseases.*)																
Grand Total	2,238	106	181	161	110	160	133	104	265	111	227	105	163	140	95	177
Group Total	199	6	25	3	11	8	8	8	51	6	16	8	20	13	4	12
1. Typhoid Fever	82	5	....	2	2	5	1	2	37	1	3	3	8	8	1	4
4. Measles	17	....	5	....	....	....	....	1	1	1	3	1	2	2	....	1
5. Scarlet Fever	9	....	....	....	....	....	....	....	1	....	1	2	5	....	....	....
6. Whooping Cough	25	1	4	....	8	1	....	....	1	1	3	....	2	....	1	3
7. Diphtheria and Croup	33	....	11	....	1	1	3	1	7	1	4	1	....	1	1	1
8. Influenza	11	....	3	1	....	1	2	1	....	....	....	1	2	....	....	....
9. Dysentery	12	....	1	....	....	....	1	3	4	....	1	....	....	1	1	....
10. Erysipelas	10	....	1	....	....	....	1	....	....	2	1	....	1	1	....	3
(*B. Other General Diseases.*)																
Group Total	352	16	28	43	20	35	20	12	72	18	39	15	25	26	13	20
12. Septicæmia	13	....	1	1	....	3	....	1	1	....	1	....	....	3	....	2
13. Tuberculosis of Lungs	74	1	5	14	2	....	2	3	2	7	13	1	2	10	5	7
14. Tuberculosis of larynx	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
15. Tuberculous meningitis	14	....	1	2	....	3	....	....	1	....	2	1	2	1	....	1
16. Abdominal tuberculosis	2	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
19. White swelling	2	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....
20. Tuberculosis of other organs	5	....	1	1	....	2	....	....	....	....	....	....	1	....	....	....
21. General Tuberculosis	75	3	4	3	5	10	7	5	13	3	2	5	4	1	5	5
23. Venereal diseases	4	....	....	1	....	....	....	....	....	....	1	....	1	....	....	1
24. Cancer of mouth	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....
25. Cancer of stomach and liver	25	3	5	6	....	4	....	....	....	....	3	....	3	....	....	1
26. Cancer of intestines	9	....	1	2	....	2	2	....	....	1	1	....	....	....	....	....
27. Cancer of genital organs	2	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....
28. Cancer of breast	7	1	2	....	....	....	....	....	....	....	1	1	....	2	....	....
30. Cancer of other unspecified organs	42	5	3	3	4	7	2	2	1	3	2	2	3	4	1	....
31. Tumors	7	....	....	1	1	1	1	1	....	....	1	....	....	1	....	....
32. Rheumatism	9	....	1	....	2	....	....	....	....	....	2	2	1	1	....	....
33. Diabetes	11	....	....	2	1	1	1	....	1	2	2	....	1	....	....	....
34. Anæmia, leukæmia	35	....	4	6	3	2	2	....	....	2	6	2	5	1	1	1
35. Alcoholism	5	....	....	....	....	....	....	....	3	....	....	....	....	1	....	1
36. Chronic poisonings	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....
37. Other General Diseases	8	1	....	....	1	....	....	....	....	....	2	1	1	....	1	1
II. DISEASES OF NERVOUS SYSTEM.																
Group Total	236	10	25	20	13	22	11	7	16	21	24	12	13	15	16	11
38. Encephalitis	3	....	....	....	....	....	....	1	....	....	1	....	....	....	1	....
39. Meningitis	53	1	5	4	1	3	1	3	3	4	6	5	3	8	1	6
40. Locomotor ataxia	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....
42. Apoplexy	62	2	10	7	4	5	5	....	3	8	3	2	5	2	4	2
43. Softening of Brain	2	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....
44. Paralysis	48	3	3	3	3	8	2	1	2	7	6	3	3	....	3	1
45. Other forms of mental disease	3	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....
47. Other diseases of brain	4	....	....	1	....	1	....	....	....	1	1	....	....	....	....	....
48. Epilepsy	4	....	2	1	....	....	....	1	....	....	....	....	....	....	....	....
49. Convulsions	48	3	5	3	5	1	1	1	8	1	4	....	1	5	7	3
50. Tetanus	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
51. Other diseases of nervous system	7	1	....	....	....	1	2	....	....	....	3	....	....	....	....	....
III. DISEASES OF CIRCULATORY SYSTEM.																
Group Total	141	8	14	16	2	10	12	3	9	6	22	3	14	5	6	11
53. Endocarditis	8	....	1	1	....	1	....	1	....	....	1	....	....	1	....	2
54. Heart disease	106	6	13	13	2	8	9	1	7	4	16	2	7	4	6	9
55. Angina pectoris	2	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....
56. Diseases of arteries	12	1	....	2	....	1	1	....	....	....	3	....	4	....	....	....
57. Embolism and thrombosis	2	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....
58. Diseases of veins	2	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....
60. Other diseases of circulatory system	9	1	....	....	....	....	1	1	2	....	1	1	1	....	1	....

TABLE No. 12.—*Continued.*

Table showing Total Deaths by Individual Diseases.—*Continued.*

Causes of Death.	Totals.	Barrie.	Berlin.	Brockville.	Collingwood.	Cornwall.	Galt.	Hawkesbury.	Kenora.	Lindsay.	Owen Sound.	Pembrook.	Sarnia.	Sault Ste. Marie	Smiths Falls.	Toronto Junction.
IV. DISEASES OF RESPIRATORY SYSTEM.																
Group Total	251	14	19	17	10	6	16	17	21	18	34	14	16	13	12	24
61. Diseases of larynx	3	1	1	1	....	....	....	....	....	....	....	....	....	....	....	....
63. Acute Bronchitis	40	2	2	2	2	2	2	....	....	3	8	5	5	....	1	6
64. Chronic Bronchitis	17	1	2	1	2	....	1	....	....	1	8	....	....	....	....	1
65. Broncho-pneumonia	24	1	6	2	1	1	1	....	....	7	2	....	1	....	....	2
66. Pneumonia	139	7	6	10	3	....	10	17	19	6	13	8	7	11	11	11
67. Pleurisy	11	....	1	....	....	2	1	....	1	1	1	1	1	....	....	2
68. Congestion of lungs	5	....	....	....	1	1	1	....	....	....	1	....	....	....	....	1
69. Gangrene of lungs	2	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....
70. Asthma and Emphysema	5	....	....	....	1	....	....	....	1	....	....	....	1	1	....	1
71. Hemorrhage of lungs	2	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....
72. Other diseases of the respiratory system, phthisis excepted	3	2	....	....	....	....	....	....	....	....	....	....	1	....	....	....
V. DISEASES OF DIGESTIVE SYSTEM.																
Group Total	210	7	14	13	7	18	14	5	16	6	25	13	16	17	14	25
74. Tonsilitis	4	....	1	....	....	....	....	....	....	....	1	....	....	1	....	1
75. Other diseases of pharynx	2	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....
76. Ulcer of stomach	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
77. Gastritis	7	1	....	....	....	....	1	....	....	....	1	....	1	3	....	....
78. Other diseases of the stomach	33	....	4	3	1	1	2	1	2	....	1	....	1	....	4	13
79. Dentition	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
80. Diarrhœa & enteritis (under 2 yrs).	84	1	2	4	5	8	6	3	8	3	11	12	8	6	4	3
81. Diarrhœa & Enteritis (2 yrs. & over)	18	1	3	....	....	2	1	....	3	....	2	....	3	....	2	1
82. Hernia	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....
83. Obstruction of intestines	13	....	1	1	1	1	....	....	....	1	4	....	....	1	....	3
84. Other diseases of intestines	6	....	....	1	....	1	....	....	....	1	2	....	1	....	....	....
85. Acute yellow atrophy of liver	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....
86. Hydatid tumors of liver	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....
87. Cirrhosis of liver	6	....	....	2	....	1	....	....	....	....	1	....	....	....	1	1
88. Biliary calculi	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
89. Other diseases of liver	3	1	....	....	....	....	....	....	....	....	....	....	....	1	1	....
91. Peritonitis (not puerperal)	16	....	1	2	....	3	....	1	1	1	....	....	1	3	2	1
92. Appendicitis	12	2	2	....	....	1	3	....	....	....	....	1	1	2	....	....
VI. DISEASES OF GENITO-URINARY SYSTEM.																
Group Total	78	4	6	8	3	8	4	7	4	4	6	2	13	2	3	4
94. Acute Nephritis	9	....	....	1	....	....	1	5	....	....	....	....	1	....	1	....
95. Bright's disease	48	2	3	5	3	5	2	1	3	4	4	1	8	2	1	4
96. Other diseases of kidneys	4	1	1	....	....	....	....	....	....	....	....	1	....	....	1	....
97. Calculi of urinary tract	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....
98. Diseases of Bladder	9	....	2	2	....	1	....	1	....	....	1	....	2	....	....	....
100. Uterine tumor	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
101. Other diseases of uterus	2	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....
102. Ovarian tumor	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....
103. Diseases of the tubes	2	....	....	....	....	1	....	....	1	....	....	....	....	....	....	....
105. Other diseases of the Genito-urinary system	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....
VII. THE PUERPERAL STATE.																
Group Total	14	1	....	....	1	2	....	1	....	1	3	1	2	....	1	1
106. Puerperal septicæmia	2	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....
107. Puerperal convulsions	2	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....
108. Other causes incident to child-birth	10	....	....	....	1	1	....	1	....	1	2	....	2	....	1	1
VIII. DISEASES OF SKIN.																
Group Total	18	1	2	1	3	2	....	2	....	....	1	2	1	2	....	1
109. Gangrene	10	1	1	1	1	1	....	1	....	....	1	....	1	2	....	....
111. Abscess	5	....	1	....	2	1	....	....	....	....	....	1	....	....	....	....
112. Other diseases of skin	3	....	....	....	....	....	....	1	....	....	....	1	....	....	....	1

TABLE No. 12.—*Concluded.*

Table showing Total Deaths by Individual Diseases.—*Concluded.*

Causes of Death.	Totals.	Barrie.	Berlin.	Brockville.	Collingwood.	Cornwall.	Galt.	Hawkesbury.	Kenora.	Lindsay.	Owen Sound.	Pembroke.	Sarnia.	Sault Ste. Marie.	Smiths Falls.	Toronto Junction
IX. DISEASES OF LOCOMOTOR SYSTEM																
Group Total	2	....	....	....	....	1	....	....	1	....	....	....	....	....	....	....
113. Diseases of the bones	2	....	....	....	....	1	....	....	1	....	....	....	....	....	....	....
X. MALFORMATIONS.																
Group Total	6	....	3	....	....	....	....	....	....	....	1	....	....	....	....	2
116. Congenital malformations (still-births excluded)	6	....	3	....	....	....	....	....	....	....	1	....	....	....	....	2
XI. EARLY INFANCY.																
Group Total	165	5	10	17	11	16	10	15	11	9	14	9	13	8	....	17
117. Premature birth	54	2	6	6	....	1	6	....	....	3	6	3	7	4	....	10
118. Congenital debility	111	3	4	11	11	15	4	15	11	6	8	6	6	4	....	7
119. XII. OLD AGE.																
Group Total	141	14	13	3	6	17	18	3	8	7	19	6	8	7	6	6
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																
Group Total	192	6	6	8	7	7	10	2	93	3	5	4	5	13	5	18
120. Suicides	5	....	2	2	....	1	....	....	....	....	....	....	....	....	....	....
121. Fractures and dislocations	14	1	....	3	....	....	3	....	6	....	....	....	....	....	1	....
122. Burns and scalds	9	....	1	....	....	3	....	....	1	1	1	....	....	2	....	....
123. Physical phenomena	5	....	....	....	....	....	....	....	4	....	....	....	....	....	....	1
124. Drowning	29	....	1	....	1	1	3	....	7	....	....	1	3	2	1	9
125. Inhalation of poisonous gases	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
126. Other accidental poisonings	5	....	....	....	1	....	....	....	....	....	1	1	1	....	....	1
127. Other accidental traumatisms	122	5	2	3	4	2	3	2	75	2	3	2	1	8	3	7
128. Injuries at birth	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
129. Homicide	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
XIV. ILL-DEFINED DISEASES.																
Group Total	102	5	8	1	6	2	2	9	13	4	7	8	5	7	12	13
130. Dropsy	12	2	2	....	....	....	....	1	1	....	2	....	....	....	1	3
131. Heart failure	47	3	5	....	6	2	....	....	3	....	3	6	4	3	8	4
132. Other ill-defined causes	38	....	1	1	....	....	2	7	7	3	2	2	1	4	3	6
133. Unknown causes	4	....	....	....	....	....	....	1	2	1	....	....	....	....	....	....
134. XV. STILL BIRTHS.																
Group Total	136	9	8	11	10	6	8	13	....	8	11	8	12	12	3	12

TABLE No. 13.

Showing Infant Mortality under 5 years of age in Ontario, 1907.

Causes of Death.	Total	Under 1	1 Year	2 Years	3 Years	4 Years
I. GENERAL DISEASES.						
(*A. Epidemic Diseases.*)						
Grand Total	**9,930**	**8,041**	**986**	**396**	**299**	**208**
Group Total	797	364	162	107	94	70
1. Typhoid Fever	22	2	10	4	2	4
2. Malarial Fever	3					3
3. Smallpox	1	1				
4. Measles	128	50	40	24	10	4
5. Scarlet Fever	57	4	12	12	20	9
6. Whooping Cough	209	141	48	13	3	4
7. Diphtheria and Croup	185	33	29	38	49	36
8. Influenza	78	59	9	3	4	3
9. Dysentery	77	50	10	10	3	4
10. Erysipelas	31	22	3	3	2	1
11. Other Epidemic Diseases	6	2	1		1	2
(*B. Other General Diseases.*)						
Group Total	261	125	56	36	27	17
12. Septicæmia	23	14	4	2	2	1
13. Tuberculosis of lungs	37	12	11	6	4	4
14. Tuberculosis of larynx	1				1	
15. Tuberculous meningitis	78	30	17	13	10	8
16. Abdominal tuberculosis	2	2				
17. Pott's disease	1				1	
19. White swelling	2		1	1		
20. Tuberculosis of other organs	9	4	4	1		
21. General tuberculosis	45	26	6	7	4	2
22. Scrofula	1	1				
23. Venereal diseases	10	8	1			1
25. Cancer of stomach and liver	1			1		
29. Cancer of skin	1				1	
30. Cancer of other unspecified organs	8	2	4	1	1	
31. Tumors	2	2				
32. Rheumatism	4	3				1
33. Diabetes	1				1	
34. Anæmia, leukæmia	24	17	6	1		
37. Other General Diseases	11	4	2	3	2	
II. DISEASES OF NERVOUS SYSTEM.						
Group Total	990	678	183	62	36	31
38. Encephalitis	41	26	10	1	2	2
39. Meningitis	336	183	84	34	20	15
41. Other diseases of spinal cord	8	5		3		
42. Apoplexy	33	25	5	3		
43. Softening of Brain	5	2	3			
44. Paralysis	24	13	5	3	1	2
47. Other diseases of brain	7	5	2			
48. Epilepsy	9	5		1		3
49. Convulsions	497	398	65	16	10	8
50. Tetanus	4	2			1	1
51. Other diseases of nervous system	26	14	9	1	2	

TABLE No. 13.—*Continued.*

Showing Infant Mortality under 5 years of age in Ontario, 1907.—*Continued.*

Causes of Death.	Total	Under 1	1 Year	2 Years	3 Years	4 Years
III. DISEASES OF CIRCULATORY SYSTEM.						
Group Total	134	110	7	6	5	6
52. Pericarditis	1	1				
53. Endocarditis	7	4	1	1	1	
54. Heart Disease	77	60	5	3	4	5
56. Diseases of arteries	6	3	1	1		1
57. Embolism and thrombosis	2	2				
58. Diseases of veins	2	2				
59. Diseases of lymphatics	2	2				
60. Other diseases of circulatory system	37	36		1		
IV. DISEASES OF RESPIRATORY SYSTEM.						
Group Total	1,367	897	285	94	56	35
61. Diseases of larynx	26	12	3	3	3	5
62. Acute bronchitis	276	222	33	14	6	1
65. Broncho-pneumonia	313	187	88	14	13	11
66. Pneumonia	668	418	145	59	32	14
67. Pleurisy	7	1	3	1		2
68. Congestion of Lungs	41	30	9		1	1
69. Gangrene of lungs	1		1			
70. Asthma and emphysema	5	3	1	1		
71. Hemorrhage of lungs	3	3				
72. Other diseases of respiratory system, phthisis excepted	27	21	2	2	1	1
V. DISEASES OF DIGESTIVE SYSTEM.						
Group Total	1,557	1,298	174	41	24	20
73. Diseases of mouth	4	4				
74. Tonsilitis	8	2	3	1	1	1
75. Other diseases of pharynx	6	3	1	2		
77. Gastritis	121	111	8	1		1
78. Other diseases of the stomach	185	168	11	3	1	2
79. Dentition	7	6	1			
80. Diarrhœa and enteritis, (under 2 years)	1,054	919	135			
81. Diarrhœa and enteritis, (2 years and over)	41			23	13	5
82. Hernia	4	4				
83. Obstruction of intestines	40	29	5	2	1	3
84. Other diseases of intestines	28	18	7	2	1	
85. Acute yellow atrophy of liver	2			1	1	
88. Biliary calculi	6	6				
89. Other diseases of liver	14	9	2	1	2	
91. Peritonitis, non-puerperal	29	18		4	1	6
92. Appendicitis	7		1	1	3	2
93. Other diseases of the digestive system, (cancer and tuberculosis excepted	1	1				
VI. DISEASES OF GENITO-URINARY SYSTEM.						
Group Total	75	51	10	4	6	4
94. Acute nephritis	18	14	1	1		2
95. Bright's disease	39	24	7	2	4	2
96. Other diseases of kidneys	14	11	2		1	
98. Diseases of bladder	2	2				
105. Other diseases of the genito-urinary system	2			1	1	

TABLE No. 13.—*Concluded.*

Showing Infant Mortality under 5 years of age in Ontario, 1907.

Causes of Death.	Total	Under 1	1 Year	2 Years	3 Years	4 Years
VIII. DISEASES OF SKIN.						
Group Total	18	17	1	.....	.....	.....
109. Gangrene	1	1	.....	.....	.....	.....
111. Abscess	4	3	1	.....	.....	.....
112. Other diseases of skin	13	13	.....	.....	.....	.....
IX. DISEASES OF LOCOMOTOR SYSTEM.						
Group Total	13	5	6	2	.....	.....
113. Diseases of the bones	13	5	6	2	.....	.....
116. X. MALFORMATIONS.						
Group Total	88	88	.....	.....	.....	.....
XI. EARLY INFANCY.						
Group Total	2,142	2,142	.....	.....	.....	.....
117. Premature birth	709	709	.....	.....	.....	.....
118. Congenital debility	1,433	1,433	.....	.....	.....	.....
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.						
Group Total	179	69	35	24	34	17
121. Fractures and dislocations	1	.....	1	.....	.....	.....
122. Burns and scalds	62	8	18	8	19	9
124. Drowning	15	2	5	2	6	.....
125. Inhalation of poisonous gases	3	2	.....	1	.....	.....
126. Other accidental poisonings	19	5	7	2	4	1
127. Other accidental traumatisms	31	9	4	7	4	7
128. Injuries at birth	38	38	.....	.....	.....	.....
129. Homicide	10	5	.....	4	1	.....
XIV. ILL-DEFINED DISEASES.						
Group Total	563	451	67	20	17	8
130. Dropsy	5	3	.....	1	.....	1
131. Heart failure	50	32	8	4	4	2
132. Other ill-defined causes	427	352	51	12	9	3
133. Unknown causes	81	64	8	3	4	2
134. XV. STILL BIRTHS.						
Group Total	1,746	1,746	.....	.....	.....	.....

TABLE No. 14.

Deaths by Occupations, 1907—Counties.

Occupations.		15-19.	20-24.	25-29.	30-34.	35-39.	40-44.	45-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Totals. Males.	Totals. Females.
Actors	M	....	...	.....	1	...	.....	.....	.....	.....	.....	.....	.....	1	
"	F	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	1
Agents	M	..	1	4	3	3	2	11	18	24	10	6	1	84	
"	F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Artists	M	...	.....	....	2	2	.....	.....	2	....	1	..	....	7	
"	F	....	.....	.....	....	1	...	1	.....	.....	.....	.....	.....	...	2
Architects		....	.....	.....	....	1	.....	.....	1	2	2	.....	...	6	
Auctioneers		..	.....	.....	.....	1	...	1	1	2	.....	.....	.....	5	
Bakers and Confectioners		1	2	3	4	....	3	1	7	9	5	4	1	40	
Barbers		1	2	.....	5	6	4	8	3	2	1	.....	...	32	
Bartenders		....	1	6	....	3	....	1	2	1	.....	1	.....	15	
Bankers		....	2	1	1	1	1	...	1	5	1	.....	.....	13	
Blacksmiths		1	3	3	....	2	2	1	19	19	30	17	.....	97	
Bookbinders		....	.....	1	.....	.....	1	1	1	.....	...	2	.....	6	
Bookkeepers	M	3	9	10	1	7	5	1	6	8	4	.....	1	55	
"	F	1	1	1	1	....	.....	.....	.....	.....	.....	.....	.....	.....	4
Brewers and Distillers		....	1	2	1	1	....	1	2	1	1	.....	.....	10	
Brickmakers		....	2	2	....	1	...	1	.....	1	1	1	.....	9	
Brokers		....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	
Builders and Contractors		....	2	1	5	2	1	6	5	9	15	9	2	57	
Butchers		4	4	4	1	1	4	3	8	5	6	4	.....	44	
Carpenters		3	13	13	10	10	14	11	47	60	79	45	3	308	
Cabinetmakers		....	.....	.....	.....	.....	1	....	6	3	5	6	.....	21	
Carriage and Wagonmakers		....	.....	.....	.....	1	....	1	2	9	9	2	.....	24	
Cheesemakers		1	1	1	.....	.....	.....	.....	2	.....	2	.....	.....	7	
Chemists and Druggists		....	2	1	2	1	3	4	4	1	2	2	.....	22	
Cigarmakers		2	2	1	1	1	5	1	2	2	.....	.....	.....	17	
Civil Engineers		....	2	6	7	6	5	10	14	8	8	4	1	71	
Clergymen		....	2	1	2	1	2	1	5	19	12	10	1	56	
Clerks	M	34	41	26	18	23	11	3	17	20	13	4	1	214	
"	F	....	3	1	1	.....	.....	1	.....	.....	1	.....	.....	.....	7
Commercial Travellers		....	2	2	2	5	4	7	21	3	5	1	.....	52	
Cooks	M	1	2	7	3	4	4	6	12	2	5	.....	.....	46	
"	F	....	2	.....	1	....	1	1	.....	.....	.....	.....	.....	.....	5
Dentists		....	1	2	3	1	2	....	4	1	5	.....	.....	19	
Dressmakers		2	5	5	2	9	3	8	5	4	3	.....	.....	.....	46
Drovers		....	.....	1	....	2	1	2	3	1	.....	.....	.....	10	
Editors and Reporters		....	.....	.....	.....	.....	.....	.....	1	1	.....	1	....	3	
Electricians		1	4	4	1	3	1	3	2	1	.....	.....	.....	20	
Farmers		99	131	116	102	105	143	169	145	753	1,107	1,034	10	4,214	
Factory hands	M	10	5	7	3	5	2	4	2	7	3	.....	.....	48	
"	F	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Foremen		....	.....	4	3	....	3	3	6	.....	3	1	.....	23	
Forewomen		....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	2
Furrier		....	.....	.....	.....	.....	.....	1	.....	1	1	.....	.....	3	
Firemen		1	1	5	1	1	.....	.....	2	.....	.....	.....	.....	11	
Gardener		4	2	2	3	1	3	3	9	13	18	18	.....	76	
Harnessmaker		....	1	1	....	1	...	1	3	8	4	4	.....	23	
Housewives		71	333	556	511	618	505	479	1,158	1,635	1,878	1,310	23	.....	9,107
Housemaids		1	10	2	3	2	2	2	8	5	2	2	1	....	40
Hotelkeepers		....	1	2	1	6	4	8	9	9	6	.....	3	49	
Hunters and Fishermen		1	1	.....	1	1	.....	.....	4	4	3	5	.....	20	
Laborers		171	243	246	198	200	167	154	350	421	353	191	34	2,728	
Lawyers		....	.....	.....	1	1	2	5	3	12	.....	4	.....	28	
Laundry hands	M	....	7	.....	.....	.....	.....	2	.....	3	.....	.....	.....	6	
"	F	....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	...	.....	2
Liverymen		....	1	1	.....	.....	.....	2	1	.....	1	.....	.....	6	
Lumbermen		5	6	3	4	6	7	3	2	12	5	2	1	56	
Managers		....	.....	.....	.....	1	.....	.....	2	1	.....	.....	.....	4	
Manufacturers		3	2	7	2	2	2	5	15	17	11	5	.....	71	
Masons		3	.....	3	3	4	1	5	6	6	8	1	.....	46	
Machinists		2	11	6	8	4	2	7	11	3	5	10	2	71	
Mechanics		2	14	9	6	1	4	10	8	9	7	2	.....	72	
Merchants		....	4	14	14	11	16	19	41	43	49	23	.....	234	
Milkmen		....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	
Millers		....	.....	.....	2	2	4	4	5	5	8	7	1	38	
Milliners		6	1	1	1	2	.....	.....	1	1	2	.....	.....	.....	15
Miners		....	11	10	7	3	4	3	6	1	3	.....	10	58	
Moulders		....	3	5	3	7	2	2	7	3	5	1	.....	38	
Music Teachers	F	3	1	2	2	3	1	3	3	3	1	.....	.....	.....	22
Nuns		....	.....	.....	2	.....	.....	.....	3	.....	3	.....	.....	.....	6
Nurses		1	6	10	2	3	5	4	2	2	3	.....	1	.....	39
Painters and Decorators		4	7	6	7	1	11	8	13	13	11	2	.....	83	
Pedlars		....	2	1	....	2	3	....	3	.....	.....	1	.....	12	
Physicians		....	1	1	3	4	3	2	6	7	5	1	.....	33	
Photographers		....	.....	1	....	2	1	....	1	.....	2	.....	.....	7	
Plasterers		....	.....	1	2	2	4	2	3	8	2	1	.....	25	
Plumbers and Gasfitters		3	2	7	2	....	2	1	1	1	.....	.....	.....	19	
Polishers and Grainers		....	.....	1	....	....	.....	1	.....	.....	.....	.....	.....	2	

TABLE No. 14.—*Concluded.*

Deaths by Occupations, 1907—Counties—*Concluded.*

Occupations.		15-19.	20-24.	25-29.	30-34.	35-39.	40-44.	45-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Totals. Males.	Totals. Females.
Policemen		....	.....	.....	2	2	2	1	3	4	.....	.....	.....	14	
Printers		4	5	3	2	5	3	6	7	1	2	.....	.....	38	
Professors		....	1	.....	....	....	....	....	.....	1	.....	.....	.....	2	
Public Officials		....	3	2	2	1	6	4	26	16	27	9	1	91	
Railway Employees		8	58	42	24	15	24	11	19	20	11	3	2	237	
Sailors		1	7	4	1	4	2	2	4	8	10	5	.....	48	
Servants		16	20	6	4	8	8	7	21	16	12	7	.....	125	
School Teachers	M	1	1	3	3	3	2	2	5	1	5	3	.....	28	
"	F	5	7	10	4	5	....	1	8	3	.....	.....	1	.....	44
Shoemakers		1	1	.....	2	1	....	....	6	8	17	15	2	53	
Stenographers		7	5	5	3	2	1	...	1	.....	.. ...	.....	.....	.....	24
Stonecutters		1	.....	1	1	....	4	....	5	1	2	1	.....	16	
Street Railway Employees		....	2	.....	1	2	1	1	3	.....	1	.....	.....	11	
Students	M	23	14	4	1	...	....	....	.....	.....	.....	.....	.....	42	
"	F	14	9	4	....	....	....	....	.....	.....	.....	.....	.....	.....	27
Tailors	M	2	5	5	2	5	2	5	3	15	14	5	.....	63	
"	F	1	5	2	4	3	2	....	1	.....	5	.....	1	.. ...	24
Tanners and Curriers		....	1	.....	....	....	1	1	2	1	2	1	.....	9	
Teamsters		....	7	6	3	7	7	8	18	32	8	1	1	98	
Telegraph Operators		3	12	3	8	3	1	3	1	.....	.....	.....	1	35	
Tinsmiths		1	2	.....	1	....	....	3	.....	4	2	1	.....	14	
Undertakers		....	1	1	....	....	....	1	1	.....	5	.....	.....	9	
Upholsterers		....	1	.....	....	....	1	1	.....	.....	.....	.....	.....	3	
Volunteer and Soldiers		....	2	2	1	1	....	1	1	1	2	1	1	13	
Watchmakers and Jewellers		2	.....	3	3	1	2	....	1	7	4	.....	.....	23	
Watchmen		....	.....	.....	....	....	....	2	2	.....	.....	.....	.....	4	
Weavers		1	.....	1	1	....	....	....	2	2	8	4	1	20	
Waiters		2	1	.....	....	2	....	2	.....	.....	.....	...	.....	7	
Waitresses		1	1	.....	...	....	...	....	1	.....	.....	.....	.....	.....	3
No occupation	M	115	82	97	55	49	68	41	178	405	588	820	22	2,520	
" "	F	290	243	158	94	108	93	91	211	378	718	936	6	.....	3,326
Other "	M	1	2	1	1	1	2	3	1	8	6	1	.....	27	
" "	F	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total—Males		542	782	145	567	573	602	615	1,485	2,130	2,568	2,309	103	13,021	
" Females		403	632	757	631	757	613	591	1.403	2,033	2,616	2,278	33	.....	12,747
		945	1,414	1,502	1,198	1,330	1,215	1,206	2,888	4,163	5,184	4.587	136	25,768	

Still-births	1,746
Under 15	3,077
Occupations unspecified	2,911
Total deaths	33,502

TABLE No. 15.

Deaths by Occupations, 1907—Cities.

Occupations.		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-59	60-69	70-79	80 and over.	Not given.	Totals. Males.	Totals. Females
Actors	M	....	....	....	1	....	....	....	....	....	....	....	....	1	
"	F	....	....	....	....	1	....	....	....	....	....	....	....	....	1
Agents	M	1	....	2	1	2	2	2	8	14	4	3	....	39	
"	F	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Artists	M	....	....	....	....	2	....	....	1	....	1	....	....	4	
"	F	....	....	....	....	1	....	....	....	....	....	....	....	....	1
Architects		....	....	....	....	....	....	....	1	1	....	....	....	2	
Auctioneers		....	....	....	....	1	....	1	....	....	....	....	....	2	
Bakers and Confectioners		1	2	2	1	....	....	....	3	4	2	....	1	16	
Barbers		....	....	....	3	4	2	3	2	....	....	....	....	14	
Bartenders		....	....	3	....	2	....	1	....	....	....	....	....	6	
Bankers		....	1	....	1	1	....	....	1	1	1	....	....	6	
Blacksmiths		....	....	....	....	....	....	....	3	4	3	1	....	11	
Bookbinders		....	....	....	....	....	....	....	....	....	....	1	....	1	
Bookkeepers	M	1	2	5	....	3	2	....	4	2	2	....	....	21	
"	F	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Brewers and Distillers		....	....	....	....	....	....	....	....	....	1	1	....	2	
Brickmakers		....	1	2	....	1	....	1	....	1	1	....	....	7	
Brokers		....	....	....	....	....	....	1	....	....	....	....	....	1	
Builders and Contractors		....	1	1	2	2	1	1	2	6	8	3	....	27	
Butchers		....	....	2	1	....	1	1	1	1	1	....	....	8	
Carpenters		1	6	5	4	5	4	2	15	11	19	9	....	81	
Cabinetmakers		....	....	....	....	....	....	....	1	1	....	1	....	3	
Carriage and Wagon Makers		....	....	....	....	....	....	....	....	3	....	....	....	3	
Chemists and Druggists		....	....	....	....	....	1	1	3	....	....	....	....	5	
Cigarmakers		1	....	....	....	1	3	1	1	2	....	....	....	9	
Civil Engineers		....	1	3	3	4	3	3	7	3	4	3	....	34	
Clergymen		....	2	1	1	....	1	....	1	10	4	4	....	24	
Clerks	M	14	16	13	8	10	3	3	9	8	9	1	1	95	
"	F	....	3	1	....	....	....	....	....	....	....	....	....	....	4
Commercial Travellers		....	1	2	2	3	3	5	11	1	5	....	....	33	
Cooks	M	....	1	2	1	1	....	....	2	....	2	....	....	9	
"	F	....	....	....	1	....	....	....	....	....	....	....	....	....	1
Dentists		....	....	1	1	....	1	....	1	....	1	....	....	5	
Dressmakers		1	....	1	1	5	1	1	3	2	1	....	....	....	16
Drovers		....	....	1	....	1	....	....	3	....	....	....	....	5	
Editors and Reporters		....	....	....	....	....	....	....	1	....	....	....	....	1	
Electricians		1	3	1	1	1	1	1	....	....	....	....	....	9	
Farmers		7	11	6	9	9	8	12	27	49	41	47	....	229	
Factory hands	M	9	5	3	2	2	2	4	2	5	2	....	....	36	
"	F	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Foremen		....	....	1	....	....	1	1	1	....	....	....	....	4	
Firemen		....	....	4	....	....	....	....	1	....	....	....	....	5	
Gardeners		1	....	....	1	....	1	1	4	3	1	4	....	16	
Harnessmakers		....	....	....	....	1	....	....	1	3	2	....	....	7	
Housewives		16	78	106	109	143	114	93	275	331	311	189	3	....	1,768
Housemaids		....	2	1	1	....	....	1	1	....	....	....	....	....	6
Hotelkeepers		....	....	1	1	1	....	3	1	1	....	....	....	8	
Laborers		34	40	69	47	46	43	36	86	109	84	49	6	649	
Lawyers		....	....	....	1	....	1	3	2	7	....	2	....	16	
Laundry hands	M	....	1	....	....	....	2	....	2	....	....	....	....	5	
"	F	....	....	....	....	....	....	....	1	1	....	....	....	....	2
Liverymen		....	....	....	....	....	....	....	1	....	....	....	....	1	
Lumbermen		....	....	....	1	2	1	1	....	4	1	....	....	10	
Managers		....	....	....	....	1	....	....	2	1	....	....	....	4	
Manufacturers		3	1	3	1	1	1	3	11	9	1	....	....	34	
Masons		....	1	....	1	2	2	....	2	2	2	....	....	12	
Machinists		2	5	1	2	2	2	2	5	3	1	1	....	26	
Mechanics		....	4	1	2	....	1	4	4	2	4	....	....	22	
Merchants		....	....	1	4	6	5	4	15	13	14	9	....	71	
Millers		....	....	....	....	....	1	1	2	1	2	1	....	8	
Milliners		1	1	....	....	2	....	....	....	....	....	....	....	....	4
Miners		....	....	....	....	....	....	1	....	....	....	....	....	1	
Moulders		....	....	3	1	1	....	....	3	....	....	....	....	8	
Music Teachers	F	....	....	....	....	2	1	2	2	3	1	....	....	....	11
Nuns		....	....	....	1	....	....	....	2	....	....	....	....	....	3
Nurses		....	1	2	....	1	1	1	2	2	2	....	....	....	12
Painters and Decorators		4	2	4	2	1	7	3	7	5	5	....	....	40	
Peddlars		....	1	....	....	....	1	....	1	....	....	....	....	3	
Physicians		....	1	....	1	1	....	....	2	1	....	....	....	6	
Photographers		....	....	....	....	....	....	1	1	....	....	....	....	2	
Plasterers		....	....	....	1	2	3	1	1	3	....	....	....	11	
Plumbers and Gasfitters		2	1	4	....	....	1	....	1	1	....	....	....	10	
Polishers and Grainers		....	....	1	....	....	....	....	....	....	....	....	....	1	
Policemen		....	....	....	1	1	1	1	1	3	....	....	....	8	
Printers		....	2	....	....	2	1	3	6	1	2	....	....	17	
Professors		....	1	....	....	....	....	....	....	1	....	....	....	2	
Public Officials		....	2	....	....	....	....	....	10	3	5	4	....	24	

TABLE No. 15.—*Concluded.*

Deaths by Occupations, 1907—Cities—*Concluded.*

Occupations.	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-59	60-69	70-79	80 and over.	Not given.	Totals. Males.	Totals. Females.
Railway Employees	2	12	13	7	4	8	5	8	6	5	1	.....	71	
Sailors	1	3	1	....	.....	....	1	.....	3	7	.....	.....	16	
Servants	5	8	1	2	5	6	4	9	7	8	3	.....	58	
School Teachers	....	.....	2	....	2	....	....	4	.....	2	2	.....	12	
Shoemakers	....	.....	.....	1	....	....	1	2	6	3	5	.....	18	
Stenographers	2	3	1	....	2	1	....	1	.....	.....	.....	.....	.....	10
Stonecutters	3	.....	.....	....	1	1	1	2	1	.....	.....	.....	9	
Street Railway Employees	....	1	.....	1	2	1	1	2	.....	.....	.....	.....	8	
Students M	5	3	4	1	....	....	....	.....	....	.....	.....	.....	13	
" F	4	2	3	....	....	....	....	.....	.....	.....	.....	.....	.....	9
Tailors M	1	1	.....	1	4	1	2	1	5	6	1	.....	23	
" F	1	5	2	4	3	2	....	1	.....	5	.....	1	.....	24
Teamsters	....	4	3	1	4	6	7	10	14	3	1	.....	53	
Tanners and Curriers	....	.....	.....	....	....	1	....	1	.....	.....	.....	.....	2	
Telegraph Operators	1	5	2	2	1	1	....	.....	.....	.....	.....	.....	12	
Tinsmiths	1	.....	.....	....	....	....	2	.....	1	1	.....	.....	5	
Undertakers	....	.....	.....	....	....	....	....	.....	.....	1	....	.....	1	
Volunteers and Soldiers	....	.....	2	....	1	....	1	.. ...	.....	1	2	.....	7	
Watchmakers and Jewellers	....	.....	1	1	...	1	....	1	2	1	.....	.....	7	
Watchmen	....	.....	.....	....	....	....	....	2	2	.....	.....	.....	4	
Weavers	....	.....	...	....	....	....	....	.....	1	.....	1	.....	2	
Waiters	2	1	.....	....	2	....	2	.....	.....	.....	.....	.....	7	
Waitresses	1	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	3
No occupation M	29	27	32	18	17	23	10	56	127	167	198	6	710	
" F	55	67	42	22	39	31	32	74	120	208	245	1	.....	936
Total—Males	132	180	209	141	168	163	148	381	478	443	358	14	2,818	
" Females	81	163	159	139	199	151	130	363	459	528	434	5	.....	2,811
	213	343	368	283	367	314	278	744	937	971	792	19	5,629	

Still-births	675
Under 15 years old	3,242
Occupation unspecified	1,030
Total deaths	10,576

Births, Marriages and Deaths

BIRTHS BY COUNTIES, 1907.

Counties.	Sex.	Jan'ary.	Feb'ry.	March.	April.	May.	June.	July.	August.	Septem-ber.	October.	Novem-ber.	Decem-ber.	Totals.	No. of Pairs of Twins.	No. of cases of Triplets.	Illegiti-mate.	Still born.
Totals.	M	2,138	2,127	2,555	2,324	2,372	2,225	2,381	2,515	2,345	2,193	2,126	2,205	27,506	563	10	408	734
	F	2,031	2,054	2,297	2,275	2,180	2,168	2,264	2,294	2,275	2,173	2,107	2,054	26,078	599	14	352	561
		4,169	4,181	4,852	4,599	4,552	4,393	4,645	4,809	4,620	4,366	4,233	4,259	53,584	581	24	760	1,295
Algoma	M	55	63	65	56	59	63	72	50	65	45	67	43	703	14	.....	9	12
	F	45	49	58	61	61	52	53	56	62	45	59	66	667	20	.....	5	14
		100	112	123	117	120	115	125	106	127	90	126	109	1,370	17	.....	14	26
Brant	M	36	34	51	43	40	37	38	47	38	46	49	41	500	8	.....	3	11
	F	31	34	36	41	48	39	29	39	34	39	30	38	438	12	.....	3	12
		67	68	87	84	88	76	67	86	72	85	79	79	938	10	.....	6	23
Bruce	M	68	50	59	57	58	44	50	43	51	52	40	48	620	17	.....	5	15
	F	34	40	54	61	65	38	33	49	48	38	50	57	567	15	.....	3	17
		102	90	113	118	123	82	83	92	99	90	90	105	1,187	16	.....	8	32
Carleton	M	99	99	112	111	115	115	100	118	111	112	98	119	1,309	28	.....	80	24
	F	104	121	93	100	94	117	114	97	119	105	107	87	1,258	32	.....	79	21
		203	220	205	211	209	232	214	215	230	217	205	206	2,567	30	.....	159	45
Dufferin	M	14	11	12	18	19	20	17	23	16	15	19	13	197	1	.....	4	2
	F	11	12	11	8	18	9	12	12	16	12	13	9	143	1	.....	.....	4
		25	23	23	26	37	29	29	35	32	27	32	22	340	1	.....	4	6
Elgin	M	35	43	43	36	41	23	43	50	29	51	29	45	468	13	.....	4	12
	F	33	44	39	30	36	30	28	38	33	38	35	37	421	19	.....	1	13
		68	87	82	66	77	53	71	88	62	89	64	82	889	16	.....	5	25

Essex	M	50	44	80	51	49	54	55	60	62	45	64	55	669	21	.....	4	30
	F	63	54	63	53	50	60	59	62	85	51	56	60	716	21	3	3	23
		113	98	143	104	99	114	114	122	147	96	120	115	1,385	21	1 case	7	53
Frontenac	M	36	29	39	33	38	35	34	32	33	28	42	34	413	10	.....	7	10
	F	38	40	42	30	48	20	43	42	34	34	29	24	424	12	.....	12	10
		74	69	81	63	86	55	77	74	67	62	71	58	837	11	.....	19	20
Grey	M	44	63	57	74	56	49	77	66	70	75	53	49	733	15	1	2	14
	F	47	64	64	74	80	62	60	53	51	50	46	54	705	17	2	6	8
		91	127	121	148	136	111	137	119	121	125	99	103	1,438	16	1 case	8	22
Haldimand	M	16	18	19	15	17	21	18	12	18	19	13	15	201	3	.....	3	5
	F	16	13	19	23	20	20	12	13	25	14	11	21	207	3	.....	2	3
		32	31	38	38	37	41	30	25	43	33	24	36	408	3	.....	5	8
Haliburton	M	3	9	11	12	17	10	11	10	12	9	6	11	121	.....	.....	.....	3
	F	11	5	7	10	10	6	8	9	8	8	5	8	95	6	.....	1	3
		14	14	18	22	27	16	19	19	20	17	11	19	216	3	.....	1	6
Halton	M	16	17	21	21	12	15	17	27	21	14	21	18	220	3	.....	2	1
	F	16	14	11	20	21	16	19	15	18	11	19	29	209	5	.....	2	2
		32	31	32	41	33	31	36	42	39	25	40	47	429	4	.....	4	3
Hastings	M	59	50	63	58	65	68	60	75	64	56	53	70	741	31	.....	4	24
	F	46	61	42	48	63	46	53	52	51	58	70	62	652	17	.....	4	14
		105	111	105	106	128	114	113	127	115	114	123	132	1,393	24	.....	8	38
Huron	M	49	44	58	40	58	47	47	44	58	53	39	42	579	14	2	6	15
	F	40	40	53	54	60	59	62	42	49	46	40	42	587	10	1	3	16
		89	84	111	94	118	106	109	86	107	99	79	84	1,166	12	1 case	9	31

BIRTHS BY COUNTIES, 1907.—*Continued.*

Counties.	Sex.	January.	Feb'ry.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	No. of Pairs of Twins.	No of cases of Triplets.	Illegitimates.	Still born.
Kent	M	48	52	40	53	43	26	41	54	42	44	44	54	541	10	2	3	12
	F	38	61	59	63	41	40	45	43	67	58	31	33	579	18	1	6	12
		86	113	99	116	84	66	86	97	109	102	75	87	1,120	14	1 case	9	24
Lambton	M	49	45	50	46	54	41	48	53	53	42	38	48	567	6	.....	6	26
	F	37	58	35	47	43	36	39	51	34	39	42	45	506	10	.....	6	16
		86	103	85	93	97	77	87	104	87	81	80	93	1,073	8	.....	12	42
Lanark	M	24	27	29	38	29	15	34	38	33	29	27	22	345	6	.....	2	14
	F	15	32	28	24	27	34	33	34	35	36	28	26	352	4	.....	2	12
		39	59	57	62	56	49	67	72	68	65	55	48	697	5	.....	4	26
Leeds and Grenville	M	42	50	46	55	36	52	52	58	55	47	54	49	596	12	.....	7	26
	F	45	49	48	44	43	54	52	56	46	48	43	38	566	8	.....	5	18
		87	99	94	99	79	106	104	114	101	95	97	87	1,162	10	.....	12	44
Lennox and Addington	M	17	14	17	17	20	24	17	10	26	14	13	25	214	3	.....	4	3
	F	20	15	14	16	14	23	7	13	22	19	13	14	190	3	.....	2	5
		37	29	31	33	34	47	24	23	48	33	26	39	404	3	.....	6	8
Lincoln	M	28	30	28	21	26	32	21	35	35	32	17	30	335	9	.....	5	18
	F	26	22	29	23	33	23	18	25	34	29	28	27	317	5	.....	4	11
		54	52	57	44	59	55	39	60	69	61	45	57	652	7	.....	9	29
Middlesex	M	75	82	80	74	90	77	90	91	86	75	84	88	992	11	2	19	44
	F	66	73	82	83	77	79	82	82	71	82	82	78	937	19	1	21	18
		141	155	162	157	167	156	172	173	157	157	166	166	1,929	15	1 case	40	62

Muskoka	M	23	17	30	26	29	25	25	31	35	18	21	25	305	3	2	10
	F	25	31	23	26	29	20	24	31	25	17	21	28	300	5	4	7
		48	48	53	52	58	45	49	62	60	35	42	53	605	4	6	17
Nipissing	M	55	87	91	69	70	93	77	76	72	69	55	68	882	20	11	19
	F	73	65	84	81	67	69	68	67	78	68	67	73	860	16	9	17
		128	152	175	150	137	162	145	143	150	137	122	141	1,742	18	20	36
Norfolk	M	21	25	26	19	33	18	20	39	23	24	11	22	281	6	6	10
	F	28	21	18	37	20	19	24	32	25	23	24	20	291	10	2	7
		49	46	44	56	53	37	44	71	48	47	35	42	572	8	8	17
Northumberland and Durham	M	37	46	48	58	57	49	54	53	60	48	39	50	599	11	10	25
	F	43	43	41	61	47	40	56	50	50	48	48	38	565	19	5	16
		80	89	89	119	104	89	110	103	110	96	87	88	1,164	15	15	41
Ontario	M	39	21	33	33	22	43	55	41	29	52	46	34	448	5	3	17
	F	35	36	33	40	28	22	33	46	32	33	39	35	412	11	2	12
		74	57	66	73	50	65	88	87	61	85	85	69	860	8	5	29
Oxford	M	37	47	55	48	21	46	50	59	42	37	34	46	522	11	9	16
	F	28	38	50	41	30	36	43	45	44	40	33	36	464	3	8	12
		65	85	105	89	51	82	93	104	86	77	67	82	986	7	17	28
Parry Sound	M	36	38	43	39	44	33	26	31	37	36	37	27	427	11	7	16
	F	24	30	32	18	31	21	33	30	34	22	28	26	332	13	5	5
		60	68	75	57	75	57	59	61	71	58	65	53	759	12	12	21
Peel	M	17	16	9	21	16	21	17	16	20	22	19	18	212	4	2	2
	F	17	13	21	16	7	13	9	20	11	21	14	7	169	2	2	1
		34	29	30	37	23	34	26	36	31	43	33	25	381	3	4	3

BIRTHS BY COUNTIES, 1907.—*Continued.*

Counties.	Sex.	Jan'ary.	Feb'ry.	March.	April.	May.	June.	July.	August.	Septem-ber.	October.	Novem-ber	Decem-ber.	Total.	No. of Pair of Twins.	No. of cases of Triplets.	Illegiti-mate.	Still born.
Perth	M	48	35	59	56	44	39	47	64	42	43	49	36	562	8	.....	2	16
	F	36	31	50	33	34	48	13	37	46	39	36	34	467	8	.....	2	9
		84	66	109	89	78	87	90	101	88	82	85	70	1,029	8	.....	4	25
Peterboro'	M	40	30	41	40	47	35	41	42	49	33	26	20	444	6	.....	4	14
	F	34	22	38	43	34	28	57	39	33	26	39	33	426	6	.....	1	8
		74	52	79	83	81	63	98	81	82	59	65	53	870	6	.....	5	22
Prescott and Russell	M	77	63	98	81	90	74	79	79	53	63	69	74	900	31	.....	.....	21
	F	75	64	92	63	63	69	82	68	74	64	59	60	833	21	3	1	17
		152	127	190	144	153	143	161	147	127	127	128	134	1,733	26	1 case	1	38
Prince Edward	M	11	11	12	12	22	7	13	19	16	8	6	12	149	2	.....	.....	5
	F	15	9	17	16	17	16	20	13	9	18	11	11	172	2	.....	2	2
		26	20	29	28	39	23	33	32	25	26	17	23	321	2	.....	2	7
Rainy River	M	15	17	22	16	17	23	16	21	18	20	17	25	227	9	.....	1	8
	F	25	19	18	16	12	16	17	11	16	23	17	24	214	9	.....	2	2
		40	36	40	32	29	39	33	32	34	43	34	49	441	9	.....	3	10
Renfrew	M	51	71	62	65	58	59	42	57	58	48	60	61	692	23	.....	3	20
	F	69	49	69	61	50	70	63	55	57	58	43	55	699	21	.....	7	23
		120	120	131	126	108	129	105	112	115	106	103	116	1,391	22	.....	10	43
Simcoe	M	91	80	106	94	83	80	74	100	82	73	97	97	1,057	18	1	8	39
	F	64	54	88	95	79	87	87	91	85	92	74	79	975	12	2	8	23
		155	134	194	189	162	167	161	191	167	165	171	176	2,032	15	1 case	16	62

Stormont, Dundas & Glengarry	M	58	62	65	62	67	56	66	66	72	59	49	63	745	20	.....	3	23
	F	51	67	64	59	52	78	66	56	55	57	52	63	720	16	.....	2	13
		109	129	129	121	119	134	132	122	127	116	101	126	1,465	18	.....	5	36
Thunder Bay	M	37	24	44	34	37	35	40	38	33	36	23	29	410	6	.....	2	14
	F	37	15	35	24	35	30	28	35	34	47	31	23	374	8	.....	6	11
		74	39	79	58	72	65	68	73	67	83	54	52	784	7	.....	8	25
Victoria	M	31	24	25	35	26	27	27	28	29	32	21	29	334	3	.....	1	15
	F	21	22	32	35	29	29	35	32	37	27	23	30	352	13	.....	1	17
		52	46	57	70	55	56	62	60	56	59	44	59	686	8	.....	2	32
Waterloo	M	45	53	60	62	67	42	49	67	57	53	62	48	665	10	.....	3	16
	F	54	48	58	70	47	59	67	63	51	56	40	47	660	12	.....	3	8
		99	101	118	132	114	101	116	130	108	109	102	95	1,325	11	.....	6	24
Welland	M	30	25	39	23	37	35	32	29	28	29	26	30	363	12	.....	3	8
	F	25	26	36	33	40	32	27	37	37	33	23	26	375	10	.....	3	13
		55	51	75	56	77	67	59	66	65	62	49	56	738	11	.....	6	21
Wellington	M	36	45	69	38	62	47	43	61	45	40	51	50	587	16	2	5	17
	F	41	40	37	39	34	41	45	51	42	47	45	47	512	12	1	4	18
		77	85	106	77	96	88	88	115	87	87	96	97	1,099	14	1 case	9	35
Wentworth	M	95	91	110	109	96	100	115	90	102	103	92	82	1,185	8	.....	2	14
	F	93	81	108	86	74	82	102	110	89	104	83	83	1,095	16	.....	2	13
		188	172	218	195	170	182	217	200	191	207	175	165	2,280	12	.....	4	27
York	M	345	325	428	355	385	370	431	412	365	344	346	340	4,446	81	.....	142	68
	F	336	329	366	369	369	377	370	389	369	350	330	321	4,275	98	.....	101	56
		681	654	794	724	754	747	801	801	734	694	676	661	8,721	91	.....	243	124

BIRTHS BY CITIES, 1907.

Cities.	Sex.	Janu'ry.	Feb'ry.	March.	April.	May.	June.	July.	August.	Septem-ber.	October.	Novem-ber.	Decem-ber.	Total.	No. Pairs of Twins.	No. Cases of Triplets.	Illegiti-mate.	Still Births.
Total.....	M	601	590	714	670	669	650	741	715	653	616	615	611	7,845	129	4	145	168
	F	621	569	663	597	594	623	664	665	662	626	589	551	7,424	151	2	212	127
		1,222	1,159	1,377	1,267	1,263	1,273	1,405	1,380	1,315	1,242	1,204	1,162	15,269	140	2	357	295
Belleville.....	M	9	10	13	3	11	10	8	12	8	5	4	6	99	4	.....	.....	2
	F	10	8	4	3	8	9	8	12	12	11	13	10	108	6	.....	1	1
		19	18	17	6	19	19	16	24	20	16	17	16	207	5	.....	1	3
Brantford.....	M	18	19	30	23	26	27	23	28	17	31	34	24	300	7	.....	1	9
	F	20	18	20	30	34	15	24	29	25	22	18	21	276	5	.....	2	10
		38	37	50	53	60	42	47	57	42	53	52	45	576	6	.....	3	19
Chatham	M	6	13	9	2	1	2	7	4	5	4	4	9	66	.....	.....	.....	2
	F	9	7	14	8	2	3	14	3	10	12	8	5	95	2	.....	1	2
		15	20	23	10	3	5	21	7	15	16	12	14	161	1	.....	1	4
Fort William.....	M	18	11	19	14	12	20	22	21	15	22	11	18	203	3	.....	.....	7
	F	24	7	12	8	18	14	17	24	14	27	13	12	190	5	.....	.....	8
		42	18	31	22	30	34	39	45	29	49	24	30	393	4	.....	.....	15
Guelph.....	M	7	14	16	9	11	5	9	16	9	16	16	7	135	1	2	2	3
	F	8	7	9	8	8	8	12	9	10	12	13	16	120	1	1	2	1
		15	21	25	17	19	13	21	25	19	28	29	23	255	1	1 case	4	4
Hamilton.....	M	65	66	69	91	70	68	88	69	69	71	63	63	852	4	.....	.....	2
	F	68	62	74	60	55	65	79	84	66	69	63	57	802	6	.....	1	2
		133	128	143	151	125	133	167	153	135	140	126	120	1,654	5	.....	1	4

Kingston	M	20	12	16	15	13	19	18	18	16	9	19	14	189	5	.....	4	8
	F	15	17	16	9	15	8	18	20	27	14	13	8	180	5	.....	8	4
		35	29	32	24	28	27	36	38	43	23	32	22	369	5	.....	12	12
London	M	44	31	35	34	43	42	58	42	48	35	35	49	496	4	2	17	31
	F	42	36	36	45	39	41	49	46	37	57	36	43	507	8	1	18	11
		86	67	71	79	82	83	107	88	85	92	71	92	1,003	6	1 case	35	42
Niagara Falls	M	9	7	11	8	6	9	9	15	8	3	4	5	94	4	.....	.....	.....
	F	6	9	11	10	7	7	7	5	14	8	6	3	93	4	.....	.....	3
		15	16	22	18	13	16	16	20	22	11	10	8	187	4	.....	.....	3
Ottawa	M	69	74	74	79	86	79	80	80	79	75	69	81	925	20	.....	80	11
	F	78	86	66	60	60	90	83	67	78	77	72	53	870	24	.....	78	11
		147	160	140	139	146	169	163	147	157	152	141	134	1,795	22	.....	158	22
Peterborough	M	14	14	19	12	16	19	22	18	26	14	15	10	199	.....	.....	1	5
	F	10	4	18	22	16	11	17	13	14	11	21	11	168	.....	.....	1	3
		24	18	37	34	32	30	39	31	40	25	36	21	367	.....	.....	2	8
Port Arthur	M	15	5	13	15	12	10	10	8	14	12	10	8	132	1	.....	....	6
	F	7	7	16	12	12	12	8	11	15	14	12	9	135	3	.....	2	2
		22	12	29	27	24	22	18	19	29	26	22	17	267	2	.....	2	8
St. Catharines	M	12	13	15	12	14	15	9	13	17	11	8	9	148	3	.....	3	9
	F	13	9	13	12	11	3	6	12	10	11	9	9	118	1	.....	4	6
		25	22	28	24	25	18	15	25	27	22	17	18	266	2	.....	7	15
Stratford	M	8	9	15	18	14	11	17	22	13	10	11	6	154	.....	.....	1	4
	F	8	8	24	9	5	13	12	10	15	10	9	9	132	.....	.....	....	2
		16	17	39	27	19	24	29	32	28	20	20	15	286	.....	.....	1	6
St. Thomas	M	15	19	10	13	14	12	16	20	12	13	13	15	172	7	.....	2	7
	F	7	14	13	6	14	9	11	13	12	9	14	12	134	7	.....	.....	7
		22	33	23	19	28	21	27	33	24	22	27	27	306	7	.....	2	14

BIRTHS BY CITIES, 1907.—*Continued*

Cities.	Sex.	Janu'ry.	Feb'ry.	March.	April.	May.	June.	July.	August.	Septem-ber.	October.	Novem-ber.	Decem-ber.	Total.	No. Pairs of Twins.	No. Cases of Triplets.	Illegiti-mates.	Still Births.
Toronto	M	248	256	328	295	302	282	322	306	280	263	277	270	3,429	57	.....	129	47
	F	274	246	293	278	275	290	275	288	277	248	257	250	3,251	69	.....	91	42
		522	502	621	573	577	572	597	594	557	511	534	520	6,680	63	.....	220	89
Windsor	M	13	8	16	12	15	11	10	11	6	11	16	9	138	5	.....	2	9
	F	16	15	16	11	12	20	18	10	20	8	7	15	168	5	.....	1	9
		29	23	32	23	27	31	28	21	26	19	23	24	306	5	.....	3	18
Woodstock	M	11	9	6	15	3	9	13	12	11	11	6	8	114	4	.....	3	6
	F	6	9	8	6	3	5	6	9	6	6	5	8	77	.....	.....	2	3
		17	18	14	21	6	14	19	21	17	17	11	16	191	2	.....	5	9

MARRIAGES BY MONTHS, 1907.

Counties.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Total	1,651	1,233	1,326	1,725	1,314	2,931	1,680	1,702	2,476	2,189	1,682	2,006	21,915
Algoma	25	22	39	37	23	64	55	43	53	48	36	37	482
Brant	20	20	22	32	27	57	27	30	44	28	20	32	359
Bruce	37	36	23	33	21	51	15	18	38	35	24	35	369
Carleton	69	43	47	78	50	119	99	77	125	110	83	59	959
Dufferin	7	12	10	7	9	22	11	6	11	8	6	25	134
Elgin	26	15	24	20	25	43	17	24	35	29	29	54	341
Essex	144	111	113	151	138	189	213	238	255	206	234	173	2,168
Frontenac	29	16	21	24	27	64	29	29	37	27	30	32	356
Grey	47	44	37	35	22	58	37	30	59	45	31	47	492
Haldimand	10	6	13	6	10	21	8	9	13	19	11	25	151
Haliburton	4	2	1	2	1	2	2	1	.....	7	4	6	32
Halton	13	4	4	5	2	23	13	9	18	14	11	18	134
Hastings	49	33	37	34	33	47	30	43	58	55	37	37	493
Huron	39	29	39	32	27	57	17	19	53	41	27	43	423
Kent	40	22	22	33	24	40	35	24	43	38	34	47	402
Lambton	46	32	32	38	42	62	37	34	47	54	37	48	509
Lanark	18	20	17	24	12	48	23	16	26	12	16	17	249
Leeds and Grenville	26	40	25	35	25	66	30	29	52	35	30	44	437
Lennox and Addington	14	7	17	15	7	26	7	9	16	11	8	19	156
Lincoln	18	20	10	20	13	33	9	21	19	25	17	31	236
Middlesex	65	35	52	84	43	133	52	49	82	104	63	101	863
Muskoka	8	5	13	18	11	18	7	15	23	18	11	20	167
Nipissing	26	23	13	58	32	41	41	39	55	52	43	32	455
Norfolk	23	8	17	21	12	18	16	18	24	23	19	33	232
Northumberland and Durham	47	32	30	29	21	55	24	31	51	46	19	64	449
Ontario	25	19	14	12	12	30	17	16	27	34	25	19	250
Oxford	34	31	42	28	18	39	18	21	46	28	24	52	381
Parry Sound	15	11	15	13	19	30	22	23	16	13	21	27	225
Peel	12	10	11	4	3	29	8	9	7	11	8	17	129
Perth	36	32	29	32	18	70	24	19	43	28	16	47	394
Peterborough	26	18	17	24	12	42	26	22	34	33	23	26	303
Prescott and Russell	22	19	7	37	25	47	55	38	68	43	29	12	402
Prince Edward	13	5	6	13	3	22	14	4	20	13	12	22	147
Rainy River	8	5	7	21	6	17	12	11	19	14	24	17	161
Renfrew	24	18	15	39	16	70	35	28	42	40	42	15	384
Simcoe	52	39	52	69	43	90	51	36	73	70	40	56	671
Stormont, D. and G	51	35	26	44	35	77	27	22	71	45	33	21	487
Thunder Bay	13	12	11	17	32	23	30	29	29	34	25	21	276
Victoria	20	17	16	19	6	31	19	15	9	16	13	30	211
Waterloo	43	23	30	31	33	81	23	29	45	63	42	39	482
Welland	29	23	33	24	18	62	28	40	46	34	32	35	404
Wellington	55	32	24	34	17	81	25	31	33	29	17	38	416
Wentworth	62	51	48	63	68	134	74	75	103	120	70	83	951
York	261	193	245	330	273	606	327	363	508	431	306	350	4,193

MARRIAGES BY DENOMINATIONS AND AGES 1907.

Sex.	Religious Denomination of bride and bridegroom.											How married.		Totals.	Counties.	Ages.											
	Church of England.	Presbyterians.	Methodists.	Roman Catholic.	Baptists.	Congregationalists.	Lutherans.	Evangelical Association.	Salvation Army.	Hebrews	Other denominations.	No denominations.	License.	Banns.			Under 20 years of age.	20 to 24 years.	25 to 29 years.	30 to 34 years.	35 to 39 years.	40 to 44 years.	45 to 49 years.	50 to 54 years.	55 to 59 years.	60 to 64 years.	65 to 69 years.	70 years and over.	Ages not given.
Males.....	4,190	4,421	6,528	3,376	1,346	222	652	124	90	172	525	269	.....	.....	21,915	Grand Total.	354	7,751	6,932	3,188	1,516	800	504	270	202	131	90	70	107
Females....	4,210	4,311	6,414	3,550	1,350	200	670	161	77	160	516	296	.....	.....	21,915		3,764	9,277	4,851	1,780	895	453	283	147	84	51	17	11	299
Total....	8,400	8,732	12,942	6,926	2,696	422	1,322	285	167	332	1,041	565	19,469	2,446	43,830		4,118	17,028	11,783	4,968	2,411	1,253	787	417	286	185	107	81	406
Males.....	60	102	110	156	19	1	17	3	1	....	5	8	.....	.....	482	Algoma.....	8	131	196	80	33	17	6	2	3	1	2	1	5
Females....	62	108	103	167	16	1	12	....	....	....	5	8	.....	.....	482		135	179	95	28	12	9	8	1	2	2	....	.	11
Total....	122	210	213	323	35	2	29	3	1	....	10	16	397	85	961		143	313	285	108	45	26	14	3	5	3	2	1	16
Males.....	74	42	129	23	65	10	2	....	....	....	6	8	.....	.....	359	Brant.....	10	148	97	47	14	15	6	4	5	5	....	2	6
Females....	57	50	126	27	73	9	1	....	....	....	8	8	.....	.....	359		60	154	75	24	17	5	6	4	1	1	....	1	11
Total....	131	92	255	50	138	19	3	....	....	....	14	16	350	9	718		70	302	172	71	31	20	12	8	6	6	....	3	17
Males.....	48	121	112	46	12	4	11	4	....	....	10	1	.....	.....	369	Bruce.....	.....	103	139	63	26	14	4	7	6	4	....	1	2
Females...	34	144	111	33	12	1	15	12	....	....	5	2	.....	.....	369		41	150	102	25	18	5	10	3	2	3	1	..	9
Total....	82	265	223	79	24	5	26	16	....	....	15	3	329	40	738		41	253	241	88	44	19	14	10	8	7	1	1	11
Males.....	196	159	108	418	27	7	20	....	....	....	13	11	.....	.....	959	Carleton.....	16	358	274	151	72	35	14	12	10	5	6	3	3
Females...	190	147	103	452	23	1	19	....	....	....	15	6	.....	.....	959		169	426	202	77	39	16	10	6	1	2	1	1	9
Total....	386	306	211	870	50	11	39		...	....	28	17	705	254	1,918		185	784	476	228	111	51	24	18	11	7	7	4	12
Males.....	30	48	43	2	1	2	....	....	....	....	7	1	.....	.....	134	Dufferin. ...	1	29	64	18	7	9	2	1	1	....	....	1	1
Females....	31	48	43	2	1	2	.....	....	....	....	6	1	.....	.....	134		16	63	33	16	3	.....	....	....	....	1	....	..	2
Total....	61	96	86	4	2	4	.....	....	....	....	13	2	132	2	268		17	92	97	34	10	9	2	1	1	1	....	1	3

Males	45	59	131	16	61	....	2	2	....	....	17	5	.....	.....	341	Elgin	.....	140	85	50	29	11	7	5	6	1	4	2	1
Females	41	51	131	16	80	....	1	2	....	...	12	7	.....	.....	341		57	134	73	33	15	7	3	5	3	3	1	..	7
Total	86	110	262	32	144	....	3	4	....	....	29	12	329	12	682		57	274	158	83	44	18	10	10	9	4	5	2	8
Males	279	280	650	371	210	64	184	7	6	24	80	13	.....	.....	2,168	Essex	.....	71	828	562	253	173	111	72	33	26	17	9	8	2
Females	259	268	670	409	202	50	184	13	6	20	82	5	.....	.....	2,168		587	735	361	210	124	75	37	18	8	6	2	2	3
Total	538	548	1,320	780	412	114	368	20	12	44	162	18	2,067	101	4,336		661	1,563	923	463	297	186	109	51	34	23	11	10	5
Males	88	66	128	51	2	11	1	....	1	....	4	4	.....	.....	356	Frontenac	....	10	120	113	46	31	13	9	5	1	2	2	2	2
Females	95	46	132	57	2	7	1	....	3	....	6	7	.....	.....	356		72	131	97	17	19	4	....	2	2	1	1	..	10
Total	183	112	260	108	4	18	2	....	4	....	10	11	326	30	712		82	251	210	63	50	17	9	7	3	3	3	2	12
Males	62	157	161	20	20	....	39	3	6	....	12	9	.....	.....	492	Grey	.....	6	143	170	80	43	21	9	8	.	2	3	2	....
Females	70	117	161	24	28	1	33	4	3	....	12	9	.....	.....	492		78	203	110	41	24	16	1	1	1	3	....	1	7
Total	132	304	325	44	48	1	72	7	9	....	24	18	464	28	984		84	346	280	124	67	40	13	9	5	5	3	3	7
Males	27	16	53	7	19	...	12	4	....	..	4	9	.....	....	151	Haldimand	..	1	55	40	28	11	3	5	2	3	1	1	..	....
Females	29	20	53	7	14	....	11	5	....	....	4	5	.....	.....	151		30	67	28	14	5	2	3	1	1	..	...	...	.....
Total	56	36	106	14	33	....	26	9	....	....	8	14	141	10	302		31	123	68	42	16	5	8	3	4	1	1	.....	
Males	11	8	7	.....	3	....	.....	.....	.....	.....	.....	.....	.....	.....	32	Haliburton	...	1	10	10	6	4	.....	...	.....	.....	...	1	.....	
Females	13	10	7	1	1	...	.....	...	.....	.....	.....	.....	.....	.....	32		9	13	6	2	.....	.....	.....	.....	.....	...	1	..	1
Total	27	18	14	1	4	...	.....	...	...	.....	.....	.....	31	1	64		10	23	16	8	4	.....	.....	.....	..	..	2	..	1
Males	26	42	50	5	5	2	.....	...	.....	...	2	2	....	.....	134	Halton	...	2	31	43	23	14	9	3	1	2	2	...		1
Females	54	33	51	5	2	2	.....	....	.....	...	2	2	.....	.....	134		18	51	34	17	7	.....	3	....	1	1	...	.	2
Total	60	75	101	10	7	4	.....	....	.....	...	4	4	126	8	268		20	82	77	40	21	9	6	1	3	3			3
Males	74	49	273	70	7	...	2	...	1	1	9	7	.....	.....	493	Hastings	....	11	165	161	75	21	21	5	9	6	8	.	1	2
Females	83	51	270	67	7	...	1	....	1	....	10	3	.....	.....	493		108	211	99	28	15	7	9	6	..	3	1	.	6
Total	157	100	543	137	14	....	3	...	2	1	19	10	411	52	986		119	376	263	103	36	31	14	15	6	11	3	1	8
Males	50	160	145	36	11	...	5	2	3	....	4	7	.....	.....	423	Huron	.....	3	92	157	89	38	14	15	3	5	3	2	1	1
Females	61	134	159	35	3	....	11	9	2	....	6	3	.....	.....	423		43	163	137	35	21	11	3	3	..	1	....	.	.....
Total	111	294	304	71	14	...	16	11	5	....	10	10	388	35	846		46	255	294	124	59	25	18	6	5	7	2	1	1

MARRIAGES BY DENOMINATIONS AND AGES, 1907.—*Continued.*

Sex.	Religious Denomination of bride and bridegroom.												How married.		Totals.	Counties.	Ages.											
	Church of England.	Presbyterians.	Methodists.	Roman Catholic.	Baptists.	Congregationalists.	Lutherans.	Evangelical Association.	Salvation Army.	Hebrews.	Other denominations.	No denomination.	License.	Banns.			Under 20 years of age.	20 to 24 years.	25 to 29 years.	30 to 34 years.	35 to 39 years.	40 to 44 years.	45 to 49 years.	50 to 54 years.	55 to 59 years.	60 to 64 years.	65 to 69 years.	70 years and over.	Ages not given.
Males.....	50	8[illegible]	150	56	34	1	1	....	2	....	16	7	.....	.....	402	Kent..... ..	6	147	130	55	30	20	6	5	2	1	....	..	....
Females...	53	9[illegible]	147	57	31	1	.....	...	2	....	13	6	.....	.....	402		73	175	87	25	17	5	5	5	1	1	....	..	8
Total....	103	177	297	113	65	2	1	....	4	....	29	13	356	46	804		79	322	217	80	47	25	11	10	3	2	....	..	8
Males.....	69	120	218	38	21	13	2	....	4	....	11	10	.....	.....	509	Lambton	8	151	172	71	43	21	16	5	7	5	5	5	....
Females...	62	117	225	31	35	14	7	1	3	....	8	6	.....	.....	509		91	203	99	45	30	13	13	4	4	2	1	..	4
Total....	131	237	443	69	59	27	9	1	7	....	19	16	489	20	1,018		99	354	271	116	73	34	29	9	11	7	6	5	4
Males.....	54	9[illegible]	39	38	9	4	.....	....	....	....	2	4	.....	.....	219	Lanark	6	72	85	36	29	9	5	3	2	1	....	..	1
Females...	62	9[illegible]	39	40	10	4	.....	....	1	1	.....	2	.....	.....	249		41	98	62	25	10	5	1	1	1	.....	.....	..	5
Total....	116	188	78	78	19	8	.....	....	1	1	2	6	219	30	498		47	270	147	61	39	14	6	4	3	1	....	..	6
Males.....	102	82	168	51	18	1	.....	....	....	....	4	11	.....	.....	437	Leeds and Grenville	8	132	131	74	38	17	16	5	4	7	....	3	2
Females...	113	75	158	59	18	2	3	....	....	....	4	5	.....	.....	437		72	175	98	42	25	9	7	3	1	.....	.....	1	4
Total....	215	157	326	110	36	3	3	....	....	....	8	16	399	38	874		80	307	229	116	63	26	23	8	5	7	....	4	6
Males.....	19	20	100	12	.....	1	2	..	....	....	2	....	.....	.....	156	Lennox & Addington	10	49	47	26	9	6	3	2	2	1	....	..	1
Females...	24	16	98	14	.....	.....	2	...	....	....	1	1	.....	.....	156		32	61	35	10	5	6	3	1	....	.....	.....	..	.....
Total....	43	36	198	26	.....	1	4	...	....	....	3	1	144	12	312		42	113	82	36	14	12	6	3	2	1	....	..	1
Males.....	50	43	90	23	10	2	.....	2	1	....	12	3	.....	.....	236	Lincoln	.....	73	85	33	15	13	4	3	....	4	2	1	3
Females...	59	38	82	26	7	2	2	3	1	....	13	3	.....	.....	236		51	100	50	10	8	5	3	....	2	1	....	..	6
Total....	109	81	172	49	17	4	2	5	2	....	25	6	222	14	472		51	173	135	43	23	18	7	3	2	5	2	1	9

Males.....	181	178	297	61	93	5	4	3	4	1	22	11	.....	.....	863	Middlesex ...	8	314	255	147	53	25	29	10	6	7	5	2	2
Females...	194	163	309	54	97	6	2	1	4	4	17	12	.....	.....	863		105	387	214	76	31	16	11	7	2	5	1	1	7
Total	375	341	606	115	190	11	6	4	8	8	39	23	821	12	1,726		113	701	469	223	84	41	40	17	8	12	6	3	9
Males.....	49	59	63	1	3	1	.....	....	4	....	..	4	....	.....	167	Muskoka	2	59	51	27	14	8	2	....	1	....	1	..	2
Females...	46	42	56	5	3	3	1	1	5	....	3	2	.....	.....	167		43	72	34	6	6	1	1	1	....	1	....	..	2
Total	95	81	119	9	6	4	1	1	9	....	3	6	161	3	334		45	131	85	33	20	9	3	1	1	1	1	..	4
Males.....	47	83	39	223	20	1	23	1	4	....	4	10	....	.....	455	Nipissing	9	166	159	59	18	12	11	3	3	1	2	1	11
Females.. .	52	74	51	235	12	2	24	....	1	....	....	4	.....	.....	455		144	196	53	22	11	5	6	1	2	1	....	..	14
Total ...	99	157	90	458	32	3	47	1	5	....	4	14	277	178	910		153	362	212	81	29	17	17	4	5	2	2	1	25
Males.....	15	22	110	5	73	....	2	1	3	....	1	....	.....	.....	232	Norfolk.....	8	95	70	22	11	9	6	5	2	2	....	2	....
Females..	24	19	109	5	64	1	2	...	2	..	6	....	...	.....	232		52	95	35	20	7	8	1	2	3	2	....	..	7
Total ...	39	41	219	10	137	1	4	1	5	....	7	....	228	4	464		60	190	105	42	18	17	7	7	5	4	....	2	7
Males	63	98	236	20	29	4	.....	....	....	....	5	3	.....	.....	449	Northumber-	6	112	167	90	31	15	8	7	7	2	1	2	1
Females . .	75	90	236	19	15	6	.....	....	....	....	3	5	....	.....	449	l'd & Durham	49	169	136	36	20	20	8	3	2	....	1	1	4
Total	138	188	472	39	35	10	.....	....	....	....	8	8	432	17	898		55	281	303	126	51	35	16	10	9	2	2	3	5
Males	29	58	128	13	15	....	.....	....	....	1	5	1	.....	.....	250	Ontario	2	80	85	45	17	9	5	3	3	....	....	..	1
Females.	22	61	129	16	15	....	.....	....	....	1	5	1	.....	.....	250		29	102	73	19	12	8	. .	3	....	....	....	..	4
Total	51	119	257	29	30	....	.....	....	....	2	10	2	234	16	500		31	182	158	64	29	17	5	6	3	....	....	..	5
Males... ..	68	69	139	19	58	2	8	1	....	..	5	12	.	.....	381	Oxford ...	.....	126	120	46	40	14	15	8	6	1	2	.	3
Females .	60	65	142	24	60	5	5	1	2	....	7	4	.....	.....	381		43	154	91	35	24	7	9	6	....	2	1	1	5
Total ...	128	137	281	43	118	7	13	5	2	....	12	16	361	20	762		13	280	214	81	61	21	24	14	6	3	3	1	8
Males....	38	61	72	31	11	1	2	2	1	....	5	1	....	.....	225	Parry Sound.	3	81	84	38	5	4	3	1	3	1	1	1	....
Females ..	40	64	69	30	8	....	2	2	1	....	1	8	...	.....	225		75	89	39	8	4	1	3	2	....	....	....	..	4
Total ...	78	125	141	61	19	1	4	4	2	....	6	9	204	21	450		78	170	123	46	9	5	6	3	3	1	1	1	4
Males.....	20	43	18	8	5	...		....	....	..	.....	5	.....	....	129	Peel	1	36	48	25	10	5	3	....	1	....	....	.	....
Females. .	22	39	50	11	5	....	1	....	....	..	1	...	.....	....	129		12	48	46	13	6	2	1	...	....	....	....	.	1
Total	42	82	98	19	10	....	1	..	....	.	1	5	118	11	288		13	84	94	38	16	7	4	...	1	..	....	.	1

MARRIAGES BY DENOMINATIONS AND AGES, 1907.—*Concluded.*

Sex.	Religious Denominations of bride and bridegroom.												How married.		Totals.	Counties.	Ages.											
	Church of England.	Presbyterians.	Methodists.	Roman Catholic.	Baptists	Congregationalists.	Lutherans.	Evangelical Association.	Salvation Army.	Hebrews.	Other denominations.	No denominations	License	Banns			Under 20 years of age.	20 to 24 years.	25 to 29 years.	30 to 34 years.	35 to 39 years.	40 to 44 years.	45 to 49 years.	50 to 54 years.	55 to 59 years.	60 to 64 years.	65 to 69 years.	70 years and over.	Ages not given.
Males.....	56	112	104	28	13	1	45	19	2	1	9	4	.....	.....	391	Perth	2	97	148	70	37	10	10	5	4	5	2	4	....
Females...	64	102	87	33	13	1	46	29	2	1	13	3	.....	.....	394		37	166	114	40	11	3	8	3	3	1	..	..	5
Total	120	214	191	61	26	2	91	48	4	2	22	7	357	37	788		39	263	262	110	51	13	18	8	7	6	2	4	5
Males.....	52	49	108	56	18	....	1	....	7	....	7	5	.....	.....	303	Peterboro....	4	97	106	50	21	10	6	5	3	....	....	..	1
Females..	62	59	91	51	21	....	.....	....	3	5	2	6	.....	.....	303		44	140	67	26	12	6	1	2	1	...	....	..	4
Total	114	108	199	110	39	...	1	....	10	5	9	11	251	49	606		48	237	173	76	33	16	7	7	4	....	....	..	5
Males.....	14	29	11	332	9	....	.....	....	....	....	1	3	.....	.....	402	Prescott and Russell	13	174	121	35	23	12	10	2	2	3	5	1	1
Females..	20	29	15	333	4	....	.....	....	....	....	.....	1	.....	.....	402		124	182	43	18	9	7	5	2	7	....	1	1	3
Total	34	58	29	665	13	....	.....	....	....	....	1	4	99	303	804		137	356	164	53	32	19	15	4	9	3	6	2	4
Males.....	11	13	101	8	2	....	.....	....	...	....	4	2	.....	.....	147	Prince Edward	6	52	35	13	13	8	1	9	2	1	1	5	1
Females...	11	12	106	7	2	....	.....	....	1	....	3	2	.....	.....	147		35	58	23	8	4	5	4	4	1	....	1	..	4
Total	28	25	210	15	4	....	.....	....	1	...	7	4	141	6	294		41	110	58	21	17	13	5	13	3	1	2	5	5
Males.....	30	39	25	28	5	2	30	....	....	....	....	2	.....	.....	161	Rainy River.	1	1	105	26	14	8	4	....	....	....	....	..	2
Females...	21	43	26	31	5	....	37	....	....	....	4	1	.....	.....	161		39	.....	99	15	5	3	....	....	....	....	....	..	....
Total	51	72	51	59	10	2	67	....	....	....	4	3	143	18	322		40	1	204	41	19	11	4	....	....	....	....	..	2
Males.....	38	67	63	148	9	....	33	21	...	..	4	1	.....	.....	384	Renfrew.....	6	114	134	63	34	10	8	3	3	2	1	1	3
Females...	26	77	60	151	10	....	31	20	...	....	3	3	.....	.....	384		76	170	81	25	10	5	4	....	...	1	....	1	8
Total	64	144	123	299	19	....	67	41	....	....	7	4	291	93	768		82	284	218	88	44	15	12	3	3	3	1	2	13

Males.....	122	176	220	95	27	3	1	2	1	2	15	7	.....	.....	671	Simcoe	3	216	242	114	51	32	17	10	5	5	4	1	1
Females...	95	201	229	92	30	1	.....	2	1	2	13	5	.....	.....	671		104	289	154	47	38	14	9	5	4	1	1	..	5
Total	217	377	449	187	57	4	1	4	2	4	28	12	580	91	1,342		107	505	366	161	89	46	26	15	9	6	5	1	6
Males.....	55	135	89	175	13	2	11	....	....	....	5	2	.....	.....	487	Stormont, D. and Glen.	9	189	139	67	32	15	10	8	3	4	3	1	7
Females...	41	145	97	176	9	3	9	....	....	....	4	3	.....	.....	487		95	213	102	40	11	8	2	2	2	....	....	.	12
Total	96	280	186	351	22	5	20	....	....	....	9	5	351	136	974		104	402	241	107	43	23	12	10	5	4	3	1	19
Males.....	49	11	43	66	14	1	42	16	....	....	4	....	.....	.....	276	Thunder Bay	3	109	90	39	18	9	6	1	....	1	....	.	....
Females...	47	35	43	70	13	....	45	14	....	....	7	2	.....	.....	276		73	109	61	19	9	4	1	....	....	....	....	..	....
Total	96	76	86	136	27	1	87	30	....	....	11	2	209	67	552		76	218	151	58	27	13	7	1	....	1	....	.	...
Males.....	38	42	97	19	7	....	.....	..	3	....	3	2	.....	.....	211	Victoria	2	62	78	35	19	9	3	....	....	1	1	1	....
Females...	22	46	101	24	10	....	.....	....	3	....	1	1	.....	.....	211		38	91	53	11	8	1	1	1	1	....	....	..	3
Total	60	88	201	43	17	....	.....	....	6	..	4	3	194	17	422		10	156	131	46	27	10	1	1	1	1	1	1	3
Males.....	47	77	77	83	23	3	78	24	2	2	56	10	.....	.....	482	Waterloo	6	179	160	75	22	12	12	5	5	1	2	..	3
Females...	35	86	53	81	25	....	91	38	2	1	62	8	.	.....	482		57	227	113	45	11	7	5	3	1	1	....	..	10
Total	82	163	130	164	48	3	169	62	4	3	118	18	367	115	964		63	406	273	120	33	19	17	10	6	2	2	.	13
Males.....	90	67	118	29	36	5	16	1	.....	.....	35	7	.....	.....	404	Welland	6	120	114	57	38	17	26	15	5	3	1	2	....
Females...	90	55	108	15	41	3	21	1	.....	.....	27	10	.....	.....	404		63	145	83	49	21	20	10	5	1	1	1	.	5
Total	180	122	226	74	80	8	37	2	....	....	62	17	386	18	808		69	265	197	106	59	37	36	20	6	4	2	2	5
Males.....	18	110	120	50	16	8	3	1	.....	....	20	4	.....	.....	416	Wellington ..	3	97	151	81	32	18	12	7	4	3	5	1	2
Females...	58	135	116	54	18	6	4	....	..	....	19	7	.....	.....	416		41	154	124	43	21	13	5	4	5	2	....	..	4
Total	106	275	241	104	34	11	7	1	....	....	39	11	372	14	832		44	251	275	124	53	31	17	11	9	5	5	1	6
Males.....	228	190	296	96	73	10	8	5	1	15	16	14	.....	.....	951	Wentworth ..	12	357	296	132	56	33	26	9	6	5	4	4	11
Females...	210	203	280	123	63	10	1	...	1	9	19	26	.....	.....	951		145	399	213	97	31	20	15	10	1	1	1	.	18
Total	438	393	576	219	136	20	12	3	8	22	35	40	893	58	1,902		157	756	509	229	87	53	41	19	7	6	5	4	29
Males.....	1,382	835	1,041	340	223	50	45	2	30	124	79	39	...	...	4,193	York	58	1,834	1,246	528	227	111	61	39	35	13	10	8	20
Females...	1,135	788	977	348	239	53	36	....	24	116	84	93	.....	.....	4,193		458	2,124	911	335	156	66	45	15	17	1	..	..	65
Total	2,817	1,623	2,021	688	462	103	81	2	54	240	163	132	3,338	255	8,386		516	3,958	2,157	863	383	177	106	54	52	14	10	8	85

CAUSES OF DEATHS BY COUNTIES—ALGOMA (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	566	180	17	14	4	7	32	12	12	59	44	27	41	39	40	26	12	330	233	3	430	100	36	331	207	28	66	62	50	47	56	29	37	44	48	44	41	44
Group Total	66	13	1	7	1	5	12	1	..	8	4	2	3	1	1	2	5	39	27	....	56	9	1	48	16	2	15	8	6	2	3	..	3	5	6	8	1	9
1. Typhoid Fever	17	....	..	1	..	..	..	1	..	5	2	1	2	..	..	..	5	13	4	....	14	3	....	9	7	1	3	1	1	..	..	..	3	2	..	3	..	4
4. Measles	5	3	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	3	....	5	....	....	5	....	....	2	1	..	..	..	1	..	..	..	..	..	..	1
5. Scarlet Fever	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..	1
7. Diphtheria and Croup	16	2	1	1	1	2	8	..	..	..	..	1	..	..	..	..	..	7	9	....	14	1	1	15	1	....	2	2	3	..	..	..	..	..	..	1	1	2
8. Influenza	10	3	..	..	..	2	..	..	1	..	..	..	..	1	1	2	..	7	3	....	7	3	....	5	5	....	2	1	1	2	2	..	..	1	..	..	..	1
9. Dysentery	14	4	..	5	..	2	..	..	..	1	2	..	..	..	..	..	..	8	6	....	12	2	....	11	2	1	..	1	1	..	..	..	..	2	6	4	..	..
10. Erysipelas	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	1	...	2	....	....	1	1	....	1	1	..	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																						
Group Total	71	2	1	1	..	1	1	1	2	16	16	8	11	6	3	..	2	36	35	....	55	8	8	25	42	4	11	6	6	6	5	3	8	3	5	6	5	7
12. Septicæmia	5	1	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	1	4	....	4	....	1	2	3	....	1	1	..	..	..	..	..	..	..	..	..	..	3
13. Tuberculosis of lungs	29	1	..	..	..	1	1	1	..	8	7	2	5	1	1	..	1	16	13	....	22	4	3	11	17	1	5	3	4	2	1	1	2	3	..	2	3	3
15. Tuberculous meningitis	3	....	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	2	1	....	2	1	....	3	....	....	1	1	..	..	..	..	..	..	..	..	1	..
19. White swelling	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	..	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
20. Tuberculosis of other organs	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
21. General Tuberculosis	11	....	..	1	..	..	..	..	1	3	1	1	..	1	..	..	..	6	5	..	11	....	....	1	6	1	..	1	1	1	2	..	3	..	..	1	..	..
23. Venereal diseases	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	....	1	....	....	1	..	..	..	..	..	..	..	..	1	..	..	..	..
25. Cancer of the stomach and liver	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	1	1	....	....	2	....	..	..	1	..	..	1	..	..	..	..	..	..	..
28. Cancer of breast	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	..	1	..	..	1	..	..
30. Cancer of other unspecified organs	8	....	..	..	..	..	..	..	..	1	2	3	1	1	..	..	..	1	7	....	6	....	2	....	8	....	1	..	..	..	1	1	..	..	2	2	..	1
31. Tumors	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	1	..	..	..	1	..	..	..	..
35. Alcoholism	4	....	..	..	..	..	..	..	1	1	1	..	1	..	..	..	..	4	....	....	2	1	1	3	....	1	1	..	..	1	..	..	1	..	..	1	..	..

ALGOMA.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	44	11	4	..	1	..	5	..	..	4	..	1	2	6	8	2	..	27	17	....	34	9	1	24	20	....	2	8	3	4	11	4	2	1	2	2	2	3
38. Encephalitis	3	....	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	2	....	3	....	....	2	1	....	1	..	..	..	2	..	..	..	..	..	..	..
39. Meningitis	9	2	2	..	1	..	4	..	..	..	..	..	..	..	..	..	..	5	4	....	9	....	....	9	....	....	..	3	1	..	2	1	..	..	1	..	1	..
42. Apoplexy	8	....	..	..	..	..	..	..	..	..	..	..	..	5	2	1	..	6	2	....	4	3	1	2	6	....	..	3	1	1	2	..	1	..	..	..	..	..
43. Softening of the brain	3	1	.	..	..	..	1	..	..	..	..	..	..	..	1	..	..	2	1	....	3	....	....	2	1	....	..	..	..	..	..	2	..	1	..	..	..	..
44. Paralysis	5	....	..	..	..	..	..	..	..	..	..	..	..	1	4	..	..	4	1	....	2	3	....	....	5	....	..	..	1	1	1	1	..	..	..	..	..	1
48. Epilepsy	2	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	..	..	..	..	..	..	1	1	..
49. Convulsions	11	8	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	6	5	....	10	1	....	9	2	....	1	2	..	1	3	..	1	..	1	1	..	1
51. Other diseases of the nervous system	3	....	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	2	1	....	2	1	....	....	3	....	..	..	..	1	1	..	..	..	..	..	..	1
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	18	....	..	..	..	..	..	1	1	1	3	2	3	4	3	..	..	9	9	....	11	5	2	4	14	....	..	3	1	4	1	1	2	..	1	..	3	2
52. Pericarditis	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	....	....	2	....	....	....	2	....	..	..	..	1	..	1	..	..	..	..	..	..
53. Endocarditis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	.	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
54. Heart Diseases	12	....	..	..	..	..	1	1	1	2	2	2	3	..	..	..	..	6	6	....	7	3	2	3	9	....	..	2	..	3	1	..	2	..	..	..	2	2
56. Diseases of arteries	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
57. Embolism and thrombosis	1	....	.	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
58. Diseases of veins	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	61	19	4	3	..	..	6	..	..	3	5	2	7	6	6	1	2	37	27	....	52	9	3	39	22	3	6	11	8	10	5	2	1	3	1	3	9	5
61. Diseases of the larynx	3	....	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	....	3	....	3	....	....	2	1	....	2	..	..	..	..	..	..	..	..	..	..	1	..
62. Diseases of the thyroid body	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
63. Acute bronchitis	7	5	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	4	3	....	7	....	....	7	....	....	..	1	..	2	..	..	1	..	..	..	3	..
64. Chronic bronchitis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
65. Broncho-pneumonia	5	2	2	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	3	....	4	1	....	4	....	1	..	2	..	1	..	..	1	..	..	..	..	..
66. Pneumonia	41	11	2	2	..	..	3	..	..	2	4	2	5	4	5	..	1	27	14	....	31	8	2	22	17	2	4	7	6	6	5	2	..	1	1	2	3	4
67. Pleurisy	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
70. Asthma and empysema	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
71. Hemorrhage of the lungs	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
72. Other dis. of respiratory system (phthisis ex.)	3	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	....	3	....	2	....	1	1	2	....	..	1	1	..	..	..	..	..	..	..	..	1
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	48	22	2	2	..	..	3	4	3	1	1	1	4	5	..	..	..	28	20	....	39	6	3	36	11	1	5	2	2	2	2	2	10	13	3	4	1
76. Ulcer of stomach	2	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2	....	....	1	1	....	....	2	....	..	..	..	1	.	1	..	..	..	..	..	..
77. Gastritis	13	9	1	..	..	..	..	..	..	..	..	..	1	..	2	..	..	7	6	....	13	....	....	10	3	....	..	..	..	1	2	..	.	4	4	1	..	1
78. Other Diseases of the Stomach	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
80. Diarrhœa and enteritis (under 2 years)	14	13	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	7	....	13	1	....	14	....	....	2	..	..	..	..	..	1	5	6	..	..	..
81. Diarrhœa and enteritis (2 years and over)	4	....	..	2	..	..	1	..	1	..	..	..	..	..	..	..	..	4	....	....	4	....	....	4	....	....	..	..	..	1	..	..	1	..	..	1	..	..
82. Hernia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
83. Obstruction of intestines	3	....	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	1	2	....	1	2	....	1	2	....	..	..	..	..	..	..	..	..	..	1	1	..
91. Peritonitis (not puerperal)	3	....	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	2	1	....	2	1	....	1	2	....	..	1	..	..	..	..	..	1	..	..	1	..
92. Appendicitis	7	....	..	..	..	2	2	2	1	..	..	..	..	..	..	..	..	4	3	....	3	1	3	6	....	1	2	1	..	..	..	..	..	3	..	1	..

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CAUSES OF DEATHS BY COUNTIES—BRANT, 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		0.1.	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	588	130	22	8	2	3	15	9	15	31	33	45	48	53	89	77	8	326	262	....	373	181	34	275	300	13	62	63	54	51	54	38	29	40	48	57	53	39
Group Total	41	7	9	1	..	1	6	1	1	3	..	..	2	4	4	2	..	19	22	....	28	13	....	27	14	....	6	5	3	3	6	4	1	2	3	5	1	2
1. Typhoid Fever	8	....	..	..	..	..	..	1	1	3	..	..	1	1	1	..	..	5	3	....	3	5	....	2	6	....	1	..	..	..	..	..	..	1	2	4	..	..
4. Measles	4	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	4	....	4	....	....	4	....	....	1	..	1	1	..	1	..	..	..	..	..	..
5. Scarlet Fever	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	12	2	8	1	..	..	..	..	..	..	..	..	..	..	..	1	..	8	4	....	10	2	....	11	1	....	2	2	1	1	4	1	..	..	..	1	..	..
7. Diphtheria and Croup	4	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	..	..	..	..	2	..	1	..	..	1	..
8. Influenza	5	2	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	2	3	....	4	1	....	2	3	....	1	3	..	..	1	..	..	..	..	..	..	..
9. Dysentery	2	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	....	2	....	....	2	....	....	2	....	..	..	..	1	..	..	..	..	..	1	..	..
10. Erysipelas	4	1	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	1	3	....	2	2	....	2	2	....	..	..	..	1	1	..	1	..	..	..	..	1
11. Other epidemic diseases	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
(*B. Other General Diseases.*)																																					
Group Total	100	1	1	1	..	..	1	5	5	16	18	10	22	4	12	2	2	50	50	....	68	26	6	41	53	6	5	9	12	9	8	8	5	8	12	11	8	5
12. Septicæmia	3	....	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	2	1	....	2	1	....	1	1	1	..	1	..	..	..	..	..	..	..	..	1	1
13. Tuberculosis of lungs	36	....	..	..	..	..	..	1	3	11	9	5	4	1	1	..	1	14	22	..	26	7	3	17	19	....	1	3	4	5	3	4	1	3	2	5	4	1
15. Tuberculous meningitis	3	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	2	1	..	3	....	....	..	1	..	..	..	..	..	1	..	..	1	..
16. Abdominal tuberculosis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	....	....	1	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
21. General tuberculosis	14	....	..	..	..	..	..	2	1	3	2	1	4	..	1	..	..	6	8	....	9	5	....	6	7	1	..	2	1	..	1	..	3	1	4	1	1	..
24. Cancer of mouth	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	....	1	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
25. Cancer of stomach and liver	6	....	..	..	..	..	..	..	..	..	..	1	2	..	2	1	..	4	2	....	2	4	....	....	6	....	..	..	1	1	1	..	..	1	2	..	..	..
26. Cancer of intestines	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
28. Cancer of breast	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	....	....	1	..	..	..	..	..	..	..	..	1	..	..	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
30. Cancer of other unspecified organs	11	....	..	..	..	..	..	..	..	..	2	1	3	2	3	..	..	7	4	....	7	3	1	2	9	....	1	..	2	3	..	1	..	..	..	1	1	2
32. Rheumatism	4	....	..	..	..	..	..	1	..	..	..	..	..	..	2	..	1	2	2	....	2	2	....	1	2	1	..	1	2	..	..	1	..	..	..	..	..	..
33. Diabetes	2	....	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	1	..	..	..	..	..	1	..	..	..
34. Anæmia, leukæmia	13	....	..	..	..	1	..	1	..	2	1	7	..	1	..	..	..	6	7	....	11	2	....	7	5	1	2	1	..	..	2	1	1	2	2	1	..	1
35. Alcoholism	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	....	....	2	....	....	1	1	....	..	..	..	..	1	..	..	..	..	1	..	..
37. Other general diseases	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..

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BRANT.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII. THE PUERPERAL STATE.																																						
Group Total	3	....	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	....	3	....	....	3	....	....	3	....	..	..	..	..	..	..	..	..	1	..	1	1
106. Puerperal septicæmia	2	....	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	....	2	....	....	2	....	....	2	....	..	..	..	..	..	..	..	..	..	..	1	1
108. Other causes incident to childbirth	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	3	....	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	1	2	....	1	2	....	1	2	....	..	..	..	..	1	..	1	..	..	..	1	..
109. Gangrene	3	....	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	1	2	....	1	2	....	1	2	....	..	..	..	..	1	..	1	..	..	..	1	..
IX. DISEASES OF LOCOMOTOR SYSTEM.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
113. Diseases of the bones	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	1	....	.. ..	1	....	..	..	..	..	..	..	..	..	..	..	1	..
X. MALFORMATIONS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	1	..	..	..	..	..	..	..	..	..	..	1
116. Congenital malformations (still-births included)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	1	..	..	..	..	..	..	..	..	..	..	1
XI. EARLY INFANCY.																																						
Group Total	33	33	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	13	....	33	....	....	33	....	....	5	5	3	8	3	2	1	4	5	1	..	1
117. Premature birth	15	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	6	....	15	....	....	15	....	....	1	3	1	2	2	..	1	3	2	..	..	..
118. Congenital debility	18	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	7	....	18	....	....	18	....	....	4	2	2	1	1	2	..	1	3	1	..	1
119. XII. OLD AGE.																																						
Group Total	68	....	..	..	..	..	..	..	..	..	..	..	..	3	18	47	..	35	33	....	20	45	3	5	61	2	5	8	10	6	7	4	4	5	1	5	9	4
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	29	1	1	1	..	..	3	..	3	3	5	5	3	1	1	2	..	22	7	....	18	7	4	13	14	2	1	2	1	1	2	2	4	2	1	7	2	4
121. Fractures and dislocations	3	....	..	..	..	..	..	..	..	..	..	1	1	..	..	1	..	2	1	....	2	1	....	1	2	....	..	..	..	1	..	..	..	..	..	2	..	..
122. Burns and scalds	5	....	1	1	..	..	1	..	1	..	..	1	..	..	..	..	..	1	4	...	4	1	....	4	1	....	1	..	..	..	..	..	..	1	..	..	2	1
123. Physical phenomena	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
124. Drowning	2	....	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	2	....	....	....	1	1	1	....	1	..	..	..	..	..	..	2	..	..	..	..	..
126. Other accidental poisonings	4	....	..	..	..	..	..	..	1	..	3	..	..	..	..	..	..	2	2	....	2	1	1	2	2	....	..	..	1	..	1	..	..	..	1	..	1	..
127. Other accidental traumatism	13	....	..	..	..	..	1	..	1	1	2	3	2	1	1	1	..	13	....	....	8	3	2	4	8	1	..	2	..	..	1	2	2	..	1	3	..	2
128. Injuries at birth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
XIV. ILL-DISEASES.																																						
Group Total	38	9	..	..	..	2	..	..	..	1	1	5	5	5	7	3	..	22	16	....	20	17	1	17	21	....	6	4	1	5	3	1	3	3	4	2	4	2
131. Heart failure	25	2	..	..	..	1	..	..	..	1	1	4	4	3	6	3	..	15	10	....	10	14	1	7	18	....	5	3	1	2	3	1	1	1	2	2	3	1
132. Other ill-defined causes	13	7	..	..	..	1	..	..	..	..	..	1	1	2	1	..	..	7	6	....	10	3	....	10	3	...	1	1	..	3	..	..	2	2	2	..	1	1
134. XV. STILL BIRTHS.																																						
Group Total	23	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	9	....	23	....	....	23	....	....	3	..	1	1	1	2	1	1	2	5	3	3

CAUSES OF DEATHS BY COUNTIES—BRUCE (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single	Married.	Not stated.	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	0–1	1–2	2–3	3–4	4–5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	776	155	25	4	8	1	13	22	20	45	35	54	51	68	151	124		369	407		503	266	7	342	416	18	67	84	77	86	79	50	57	51	46	71	49	59
Group Total	41	10	6	1	..	..	2	4	1	1	4	1	..	5	2	4		17	24	....	30	11	....	26	14	1	5	7	4	4	1	3	1	4	4	3	2	3
1. Typhoid Fever	9	....	..	..	..	..	..	..	1	..	4	1	..	1	..	..	..	5	4	....	7	2	....	3	6	....	..	..	..	..	..	1	..	..	2	1	1
4. Measles	2	....	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	....	2	..	....	2	..	....	..	..	..	..	..	1	..	1	..	..	..	..
5. Scarlet Fever	2	....	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	2	....	2	..	....	2	..	....	..	..	..	..	..	1	..	..	..	..	1
6. Whooping Cough	4	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	....	4	..	....	4	..	....	1	1	1	..	..	..	..	..	..	1	..
7. Diphtheria and Croup	5	1	1	..	..	..	2	..	..	1	..	..	..	..	..	..	..	2	4	....	6	..	....	6	..	....	..	..	..	2	..	..	..	2	..	..	..	..
8. Influenza	11	1	1	..	..	..	..	1	..	..	..	..	..	3	2	3	..	..	6	....	5	6	....	3	7	1	2	..	..	2	1	1	..	..	..	..	..	..
9. Dysentery	4	1	1	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	2	....	1	3	....	3	1	....	..	..	..	..	..	..	1	2	1	..	..	..
10. Erysipelas	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	3	..	....	3	..	....	..	..	..	..	..	1	..	..	..	..	1	..
(*B. Other General Diseases.*)																																						
Group Total	132	....	3	..	2	..	2	3	9	23	16	22	13	17	16	6	..	55	77	....	102	30	....	51	77	4	11	18	9	20	14	10	13	7	6	11	7	6
12. Septicæmia	7	....	..	..	..	..	..	..	2	1	..	1	1	..	1	1	..	3	4	....	5	2	....	3	4	....	1	..	..	2	1	..	2	1	..	..	..	..
13. Tuberculosis of lungs	38	....	..	..	1	..	2	6	10	8	3	3	4	1	..	..	..	10	28	....	34	3	....	18	20	....	3	6	4	5	2	4	5	..	2	1	1	2
15. Tuberculous meningitis	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	..	1	....	1	..	....	..	..	..	..	..	..	1	..	..	..	..	..
19. White swelling	2	....	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	....	2	..	....	2	..	....	..	1	..	..	..	..	..	1	..	..	..	..
20. Tuberculosis of other organs	3	....	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	3	..	....	1	2	....	2	1	....	..	..	..	1	..	..	1	..	1	..	..	..
21. General tuberculosis	32	....	1	..	..	..	..	1	10	4	3	1	2	..	..	..	..	11	11	....	20	2	....	15	4	3	1	3	1	1	2	3	2	..	2	1	2	1
24. Cancer of mouth	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	1	..	....	..	1	....	..	..	..	..	..	..	..	..	..	..	1	..
25. Cancer of stomach and liver	14	....	..	..	..	..	..	..	..	..	..	1	1	2	2	1	..	11	3	....	10	4	....	1	13	....	1	3	..	4	..	1	..	3	..	2	..	..
26. Cancer of intestines	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	....	2	..	....	1	1	....	..	1	..	..	..	..	..	..	..	..	..	1
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	..	1	....	..	1	....	1	..	..	..	..	..	..	..	..	..	..	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	1	..	....	..	1	....	..	..	1	..	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	14	....	..	..	..	..	..	..	1	2	5	1	1	3	1	..	..	4	10	....	10	1	....	3	11	..	..	..	2	..	3	..	..	1	..	2	..	..
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	..	1	....	..	1	....	1	..	..	..	..	..	..	..	..	..	..	..
32. Rheumatism	2	....	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	2	....	2	..	....	..	2	....	..	..	..	..	1	..	..	1	..	..	..	..
33. Diabetes	5	....	1	..	..	..	1	..	..	1	2	4	..	..	1	..	..	3	2	....	4	1	....	2	3	..	..	2	..	..	2	..	..	..	..	1	..	..
34. Anæmia, leukæmia	18	....	1	..	..	..	1	..	..	1	2	3	1	3	4	2	..	5	13	....	12	6	....	3	11	1	..	..	1	5	3	2	..	1	..	2	..	2

BRUCE.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	92	18	5	..	..	..	..	3	..	4	2	8	5	10	22	15	..	39	53	....	58	33	1	36	54	2	9	12	7	12	8	5	6	3	6	8	6	10
38. Encephalitis	3	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	1	..	..	..	..	..	..	..	1	1	..
39. Meningitis	10	4	2	..	..	..	..	2	..	1	..	..	..	1	..	..	..	4	6	....	9	....	1	9	1	....	..	..	1	2	1	..	2	..	..	..	1	3
41. Other diseases of spinal cord	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
42. Apoplexy	31	..	..	..	..	..	..	..	..	..	1	1	3	4	11	11	..	14	17	....	11	20	....	2	29	....	1	3	3	5	5	..	1	2	1	5	2	3
44. Paralysis	21	....	1	..	..	..	..	..	..	..	..	..	3	..	4	10	3	..	12	9	....	10	11	....	2	17	2	2	6	1	4	..	1	..	1	2	1	..	3
46. Other forms or mental disease	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
48. Epilepsy	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	1	..	..	..	1	..	..
49. Convulsions	14	12	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	4	10	....	13	1	....	13	1	....	2	2	..	1	1	3	3	..	1	..	1	..
51. Other diseases of nervous system	9	1	..	..	..	..	..	1	..	1	1	1	2	1	1	..	..	3	6	....	8	1	....	4	5	....	4	..	1	..	1	..	..	..	2	..	..	1
III. DISEASES OF CIRCULATORY SYSTEM																																						
Group Total	71	5	..	..	..	..	2	2	2	4	..	5	4	10	29	8	..	40	31	....	38	32	1	21	49	1	5	1	17	4	7	4	7	1	2	13	4	6
52. Pericarditis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..
53. Endocarditis	11	1	..	..	..	..	1	..	..	2	..	3	..	..	3	1	..	8	3	....	9	2	....	5	6	....	2	..	1	1	3	..	3	..	..	..	..	1
54. Heart disease	54	3	..	..	..	..	1	2	2	2	..	2	4	10	22	6	..	29	25	....	28	25	1	15	38	1	2	1	14	3	3	4	3	1	2	13	4	4
55. Angina pectoris	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
56. Diseases of arteries	2	....	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	....	....	2	....	....	2	....	..	..	1	..	..	..	1	..	..	..	..	..
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
59. Diseases of lymphatics	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	79	14	4	2	1	1	2	1	3	6	3	3	4	5	15	15	..	33	46	....	51	27	1	39	39	1	10	18	7	10	9	3	2	2	3	4	6	5
61. Diseases of larynx	3	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	..	....	..	..	..	1	2	..	..	..	..	..	..	..
63. Acute bronchitis	5	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	4	....	5	....	....	5	....	....	2	..	..	..	1	..	..	..	1	1	..	..
64. Chronic bronchitis	11	....	..	..	..	..	..	..	..	..	..	..	2	1	5	3	..	4	7	....	3	7	1	3	8	....	1	..	2	1	..	..	1	1	.	2	..	3
65. Broncho-pneumonia	5	2	1	..	..	..	..	..	..	..	1	..	..	..	..	1	..	3	2	....	4	1	....	3	1	1	1	..	1	1	..	1	..	..	..	..	..	1	..
66. Pneumonia	44	5	1	1	..	..	1	..	3	5	2	3	2	4	1	10	..	20	24	....	29	15	....	18	26	....	4	16	3	6	4	2	..	1	2	1	3	2
67. Pleurisy	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
68. Congestion of lungs	3	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	1	....	2	1	....	2	1	....	..	..	1	..	..	2	..	..	..	..	..	..
70. Asthma and emphysema	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
71. Hemorrhage of lungs	2	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	....	2	....	....	2	....	....	2	....	2	..	..	..	..	..	..	..	..	..	..	..
72. Other diseases of respiratory system, phthisis excepted	4	..	..	..	1	..	1	1	..	1	..	..	..	..	..	..	..	....	4	....	4	....	....	4	....	....	..	..	1	..	..	..	1	..	..	.	2	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	77	24	3	1	..	..	4	4	..	2	3	6	6	3	14	7	..	40	37	....	57	19	1	40	34	3	2	9	8	8	8	4	3	6	9	9	4	7
74. Tonsilitis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	..	....	..	1	..	..	..	..	..	..	..	..	..	..
75. Other diseases of pharynx	2	....	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	1	..	..	..	..	..	1	..	..
76. Ulcer of stomach	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..
77. Gastritis	6	3	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	3	3	....	4	2	....	2	3	1	..	..	..	..	..	..	..	..	..	1	3	2	..
78. Other diseases of the stomach	18	6	..	..	..	..	..	..	..	..	..	3	2	1	6	..	..	8	10	..	10	7	1	7	10	1	1	2	1	2	3	2	2	..	5	..	..	..
80. Diarrhœa and enteritis, (under 2 years)	13	11	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	6	....	13	....	....	13	....	....	..	..	2	2	1	1	..	2	1	2	..	2
81. Diarrhœa and enteritis, (2 years and over)	3	....	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	2	1	....	2	1	....	2	1	....	..	1	..	1	..	..	..	..	..	..	..	1

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	51	5	3	1	1	..	..	1	1	..	2	5	6	7	15	4	..	18	33	....	26	24	1	18	32	1	5	1	4	3	5	3	2	8	6	7	3	4
130. Dropsy	10	....	..	..	..	..	..	..	..	..	..	..	2	3	4	1	..	3	7	....	1	8	1	3	7	....	1	..	..	..	2	1	1	2	1	1	..	1
131. Heart failure	27	....	..	.	1	..	..	1	1	..	2	3	3	3	10	3	..	7	20	....	14	15	....	4	22	1	4	1	1	3	1	..	..	5	4	3	2	3
132. Other ill-defined causes	9	5	1	1	..	..	..	..	..	..	..	1	..	..	1	..	..	4	5	....	6	3	....	8	1	....	..	..	2	..	1	1	1	1	..	3	..	..
133. Unknown causes	5	....	2	..	..	..	..	..	..	..	..	1	1	1	..	..	..	4	1	....	5	....	....	3	2	....	..	..	1	..	1	1	..	..	1	..	1	..
134. XV. STILL BIRTHS.																																						
Group Total	35	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	21	....	35	....	....	35	....	....	2	4	3	4	5	3	1	3	..	4	5	1

CAUSES OF DEATHS BY COUNTIES—CARLETON (including Municipalities of all classes), 1907.

Causes of Death.	Totals	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Sex. Male.	Female.	Not Stated.	Nativity. Canada.	Foreign.	Not Stated.	Social Con. Single.	Married.	Not Stated.	Months. January.	February.	March.	April	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1.—GENERAL DISEASES. (*A. Epidemic Diseases.*)																																						
Grand Total	1811	561	63	17	7	12	30	27	38	136	133	110	115	199	200	151	12	965	842	4	1858	299	54	947	794	70	155	156	157	123	153	147	172	203	140	141	117	149
Group Total	101	22	10	5	1	3	9	6	4	10	7	11	4	2	4	2	1	55	46	....	88	11	2	67	30	4	13	9	10	4	6	3	6	18	7	7	5	13
1. Typhoid Fever	41	....	3	..	..	1	3	3	4	10	6	7	4	..	..	..	..	27	14	....	34	7	....	21	18	2	8	4	3	3	2	1	..	4	4	4	2	6
4. Measles	4	....	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	2	2	....	4	....	....	3	1	....	..	..	2	1	..	..	..	..	..	..	..	..	..
5. Scarlet Fever	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	1	..	1	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	4	2	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	3	1	....	4	....	....	4	....	....	..	..	..	..	1	1	..	..	..	..	1	..	..
7. Diphtheria and Croup	12	1	1	3	.	1	3	2	..	1	..	..	..	..	..	..	..	3	9	....	9	2	1	11	1	....	1	1	..	..	..	..	..	2	2	..	3	1
8. Influenza	11	1	..	..	1	..	2	..	..	..	..	1	..	2	2	2	..	5	6	....	9	1	1	4	6	1	3	2	4	..	..	1	..	..	..	..	..	..	1

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CARLETON.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	189	44	16	2	2	1	1	2	3	12	15	14	12	31	23	11	..	98	91	....	156	29	4	97	86	6	27	27	32	19	21	11	5	5	7	9	12	14
63. Acute bronchitis	12	10	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	6	6	....	10	1	1	12	....	....	2	1	3	1	2	1	1	..	..	1	..	..
64. Chronic bronchitis	14	....	..	..	..	..	..	..	..	..	.	1	2	2	6	3	..	3	11	....	10	3	1	2	11	1	2	2	1	1	1	1	1	1	1	1	1	1
65. Broncho-pneumonia	32	14	7	..	1	..	..	..	1	..	1	..	1	1	3	3	..	17	15	....	29	3	....	28	9	....	4	8	4	6	..	2	1	1	..	..	4	2
66. Pneumonia	111	15	9	2	1	1	..	1	1	11	12	11	9	21	12	5	..	58	53	....	93	16	2	50	57	4	16	15	20	10	17	6	1	2	2	5	6	11
67. Pleurisy	2	....	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	1	....	1	1	....	2	....	....	..	..	..	..	..	..	1	..	1	..	..	..
68. Congestion of lungs	9	3	..	..	..	..	..	..	..	..	1	..	..	3	2	..	..	6	3	....	6	3	....	4	5	....	2	..	3	1	1	..	..	..	1	1	..	..
70. Asthma and emphysema	6	....	..	..	..	..	..	..	..	..	1	1	..	4	..	..	..	5	1	....	4	2	....	2	4	....	..	1	1	..	..	1	..	..	1	1	1	..
71. Hemorrhage of lungs	2	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	....	....	2	....	....	1	....	1	1	..	..	..	..	..	..	..	..	1	..	..	..
72. Other diseases of respiratory system (phthisis ex.)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	229	123	15	2	..	3	6	5	4	14	10	9	11	14	5	8	..	132	97	....	212	14	3	175	46	8	4	14	10	13	7	15	48	61	21	15	7	14
77. Gastritis	11	2	2	..	..	..	..	..	..	..	..	..	2	2	1	2	..	5	6	....	8	3	....	6	4	1	..	2	..	..	..	2	2	2	1	1	..	1
78. Other diseases of the stomach	7	....	1	..	..	..	..	..	..	..	..	2	..	2	2	..	..	3	4	....	6	1	....	2	3	2	..	..	..	1	..	2	..	2	.	1	..	1
80. Diarrhœa and enteritis, (under 2 years)	128	116	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	77	51	....	128	....	....	128	....	....	3	1	1	2	3	7	42	47	13	8	..	1
81. Diarrhœa and enteritis, (2 years and over)	8	....	..	1	..	1	1	..	..	..	..	..	..	1	..	4	..	4	4	....	6	2	....	3	5	....	..	1	1	1	..	..	2	2	1	..	..	..
82. Hernia	4	....	..	..	..	..	..	..	..	1	..	1	..	1	1	..	..	2	2	....	2	2	....	1	2	1	..	..	..	..	..	..	..	..	..	1	1	1
83. Obstruction of intestines	12	1	..	..	..	..	2	..	1	3	2	..	1	1	..	1	..	8	4	....	8	3	1	7	5	....	..	2	1	1	1	1	1	1	..	1	2
84. Other diseases of intestines	6	2	..	..	..	..	1	..	..	..	..	1	..	2	..	..	..	3	3	....	6	....	....	3	3	....	..	2	..	1	1	..	..	..	..	1	1	..
87. Cirrhosis of liver	6	....	..	..	..	..	..	..	..	..	2	2	2	..	..	..	..	3	3	....	5	....	1	....	6	....	..	..	2	1	..	1	..	..	..	..	1	1
88. Biliary calculi	2	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	....	2	....	2	....	....	...	1	1	..	1	..	..	..	..	..	..	..	..	..	1
89. Other diseases of the liver	4	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	1	3	....	3	1	....	....	4	....	..	1	..	..	..	..	..	1	1	1	..	..
91. Peritonitis, non-puerperal	22	2	..	1	..	2	1	2	1	4	3	2	2	2	..	..	..	14	8	....	21	1	....	13	7	2	..	4	4	3	1	1	..	2	3	2	2	..
92. Appendicitis	19	....	..	..	..	..	1	3	2	6	3	1	2	1	..	..	..	12	7	....	17	1	1	12	6	1	1	..	1	3	1	..	1	4	1	..	1	6
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	78	2	1	..	..	..	1	..	4	8	10	6	14	17	12	3	..	40	38	....	66	11	1	21	54	3	7	2	6	7	14	4	5	7	6	4	6	10
94. Acute nephritis	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	1	..	..	..	..	..	..	1
95. Bright's Disease	56	2	1	..	..	..	1	..	3	5	8	5	9	12	8	2	..	28	28	....	48	8	....	16	38	2	6	2	6	5	9	2	3	6	3	2	6	6
96. Other diseases of kidneys	4	....	..	..	..	..	..	..	..	..	..	..	2	1	1	..	..	1	3	....	3	1	....	....	4	....	..	..	..	..	2	..	1	..	1	..	..	..
97. Calculi of urinary tract	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2	....	....	2	....	....	....	2	....	..	..	..	..	.	1	..	..	1	..	..	..
98. Diseases of bladder	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	..	1	..	..	1	..	..	..	..
100. Uterine tumor	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
101. Other diseases of uterus	3	....	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	....	3	....	3	....	....	2	....	1	..	..	..	..	1	..	1	1	..	..	..	..
102. Ovarian tumor	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	....	1	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
105. Other diseases of the genito-urinary system	7	....	..	..	..	..	..	..	..	..	..	1	1	2	2	1	..	7	....	....	6	1	....	1	6	....	..	..	..	1	..	1	..	..	1	1	..	3
VII. THE PUERPERAL STATE.																																						
Group Total	15	....	..	..	..	..	..	..	2	4	5	4	..	..	..	..	..	....	15	...	10	5	....	2	13	....	3	2	1	2	..	..	1	..	2	1	2	1
106. Puerperal septicæmia	4	....	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	....	4	....	3	1	....	1	3	....	1	1	..	..	..	..	1	..	..	1	..	..
107. Puerperal convulsions	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
108. Other causes incident to childbirth	10	....	..	..	..	..	..	..	2	2	3	3	..	..	..	..	..	....	10	....	6	4	....	....	10	....	1	1	1	2	..	..	..	..	2	..	2	1

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CAUSES OF DEATHS BY COUNTIES—DUFFERIN (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(A. *Epidemic Diseases*).																																					
Grand Total	256	41	9	4	..	1	5	7	3	9	17	13	32	34	43	38	..	120	136	....	168	80	8	86	162	8	32	34	22	35	17	17	13	9	21	17	18	21
Group Total	21	7	2	1	..	..	..	3	..	..	..	..	1	2	1	4	..	8	13	....	16	3	2	13	7	1	6	7	1	..	1	3	2	..	..	..	1	..
1. Typhoid Fever	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	..	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
4. Measles	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
6. Whooping Cough	5	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	....	4	1	....	5	....	....	..	1	..	..	1	2	1	..	..	..	..	..
7. Diphtheria and Croup	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
8. Influenza	11	4	..	..	..	..	2	..	..	..	..	..	2	..	..	3	..	5	6	....	9	....	2	6	4	1	6	5	..	..	..	..	..	..	..	..	..	..
9. Dysentery	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	....	2	....	....	2	..	....	2	....	..	..	..	..	..	1	..	..	..	..	1	..
(*B. Other General Diseases*).																																					
Group Total	38	....	1	1	..	..	..	2	1	3	6	5	6	6	5	2	..	18	20	...	26	11	1	9	26	3	5	2	..	7	4	..	4	1	4	6	1	4
12. Septicæmia	2	....	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	..	..	..	..	1	..	1
13. Tuberculosis of lungs	2	....	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	1	..	..	1	..	..	..	..
15. Tuberculosis meningitis	2	....	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	....	....	1	1	....	2	....	....	..	..	..	..	..	..	..	2	..	..	..	..
20. Tuberculosis of other organs	3	....	..	1	..	..	..	..	..	1	1	..	..	..	..	..	..	2	1	....	2	1	....	2	....	1	..	..	..	..	1	1	..	..	..	1	..	..
21. General tuberculosis	4	....	..	..	..	..	..	..	..	..	1	2	..	1	..	..	..	1	3	....	3	1	....	....	4	....	1	..	..	..	..	..	1	..	..	1	..	1
25. Cancer of stomach and liver	4	....	..	..	..	..	..	..	..	..	..	..	1	..	2	1	..	3	1	....	1	3	....	1	3	....	..	..	..	..	1	..	2	..	1	..	..	..
26. Cancer of intestines	3	....	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	1	2	....	2	1	....	....	2	1	1	..	..	1	..	..	..	..	..	..	..	1
27. Cancer of genital organs	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
30. Cancer of other unspecified organs	4	....	..	..	..	..	..	..	..	..	1	1	2	..	..	..	..	3	1	....	4	....	....	....	4	....	..	1	..	3	..	..	..	..	..	..	..	..
32. Rheumatism	3	....	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	1	2	....	....	3	....	....	3	....	..	..	..	..	2	..	..	..	..	1	..	..
33. Diabetes	4	....	..	..	..	..	1	..	1	..	..	..	2	..	..	..	..	3	1	....	3	....	1	1	2	1	2	..	..	..	..	..	..	..	..	1	..	1
34. Anæmia, leukæmia	5	....	..	..	..	..	..	..	..	1	1	1	1	..	..	1	..	1	4	....	4	1	....	1	4	....	1	1	..	1	..	..	..	1	1	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	32	5	1	1	..	1	1	..	..	..	..	..	5	3	8	7	..	18	14	....	21	11	....	9	21	2	1	3	4	3	3	3	4	..	3	2	2	4
38. Encephalitis	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
39. Meningitis	3	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	2	1	....	3	....	....	2	1	....	1	..	1	..	..	..	..	..	1	..	..	..
41. Other diseases of spinal cord	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
42. Apoplexy	14	....	..	..	..	..	..	..	..	..	..	..	2	3	7	2	..	9	5	....	9	5	....	....	14	....	..	1	2	1	..	3	2	..	..	1	..	4

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DUFFERIN.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	12	....	1	..	..	..	1	1	..	..	3	2	4	..	..	..	..	10	2	....	9	....	3	2	9	1	1	1	1	..	..	..	..	3	1	2	1	2
120. Suicides	3	....	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	3	....	....	2	....	1	2	1	....	..	..	1	..	..	..	..	..	2	..	..
122. Burns and scalds	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	1	..	..	..	..	..	1	..	..	..
127. Other accidental traumatisms	7	....	1	..	..	..	1	1	..	..	1	..	3	..	..	..	..	7	....	....	5	....	7	....	6	1	1	..	..	..	..	..	..	2	1	..	1	2
XIV. ILL-DEFINED DISEASES.																																						
Group Total	12	....	..	..	..	..	..	..	..	2	..	3	1	3	3	..	..	5	7	....	10	1	1	5	7	....	3	2	1	..	..	..	1	2	1	..	1	1
131. Heart failure	8	....	..	..	..	..	..	..	..	2	..	2	..	3	1	..	..	2	6	....	8	....	....	2	6	....	2	1	..	..	..	..	1	2	1	..	..	1
132. Other ill-defined causes	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
133. Unknown causes	3	....	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	3	....	....	1	1	1	2	1	....	1	1	..	..	..	..	..	..	..	1	..
134. XV. STILL BIRTHS.																																						
Group Total	9	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	5	....	9	....	..	9	....	....	2	....	..	2	..	..	..	..	2	2	1	..

CAUSES OF DEATHS BY COUNTIES—ELGIN (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES. (*A. Epidemic Diseases.*)																																						
Grand Total	550	116	10	3	9	..	12	5	8	28	24	35	45	79	90	06	..	297	253	....	380	160	10	206	240	4	54	54	74	53	53	35	43	39	38	34	53	40
Group Total	26	9	2	2	2	..	2	1	..	2	1	1	1	1	1	1	..	10	16	....	23	3	....	19	7	....	2	1	2	2	5	..	1	..	3	1	2	7
1. Typhoid Fever	6	....	..	..	..	..	..	1	..	2	1	1	..	1	..	..	..	2	4	....	6	....	....	3	3	....	2	..	..	1	..	..	..	..	2	..	..	1
4. Measles	4	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	1	..	..	2	..	..	..	..	..	..	1
6. Whooping Cough	6	4	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	3	3	....	6	....	....	6	....	....	..	..	1	..	..	1	..	..	..	1	1	2
7. Diphtheria and Croup	4	....	..	1	1	..	2	..	..	..	..	..	..	..	..	..	..	1	3	....	3	1	....	3	1	....	..	..	..	..	1	..	..	..	1	..	1	1

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ELGIN.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	38	7	3	..	3	..	3	..	..	1	2	1	1	10	7	..	..	23	15	....	31	6	1	19	19	....	2	2	3	4	4	..	1	2	9	6	3	2
74. Tonsilitis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
77. Gastritis	4	2	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	4	....	....	2	2	....	2	2	....	1	..	..	1	..	..	..	..	..	..	2	..
78. Other diseases of the stomach	4	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	2	2	....	2	1	1	2	2	....	..	1	1	..	1	..	..	..	1	..	..	..
80. Diarrhœa and enteritis, (under 2 years)	7	4	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	....	7	....	....	7	....	....	..	..	..	..	1	..	..	..	3	2	1	..
81. Diarrhoea and enteritis (2 years and over)	5	....	..	..	2	..	1	..	..	..	..	..	..	..	2	..	..	4	1	....	5	....	....	3	2	....	..	1	1	1	..	..	..	..	..	1	..	1
82. Hernia	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	1	..	..	1	..	..	..	..	..
84. Other diseases of intestines	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
87. Cirrhosis of liver	3	....	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	3	....	..	3	....	....	1	2	....	..	..	..	..	1	..	..	1	..	..	..	1
89. Other diseases of liver	5	....	..	..	..	..	..	..	..	..	..	..	1	2	2	..	..	1	4	....	3	2	....	....	5	....	1	..	..	1	..	..	..	1	1	1	..	..
91. Peritonitis, non-puerperal	3	....	..	..	..	..	..	..	..	1	1	..	..	..	1	..	..	2	1	....	2	1	....	1	2	....	..	..	1	..	..	..	..	..	1	1	..	..
92. Appendicitis	3	....	..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	2	1	....	3	....	....	2	1	....	..	..	..	..	..	..	..	..	..	2	1	..	..
VI. DISEASE OF GENITO-URINARY SYSTEM.																																						
Group Total	35	3	..	..	..	..	..	..	..	1	3	2	2	6	7	7	4	..	20	15	....	23	12	....	5	30	....	..	6	2	2	4	2	2	5	3	1	5	3
95. Bright's disease	25	2	..	..	..	..	..	..	..	1	2	1	1	5	6	6	1	..	14	11	....	15	10	....	4	21	....	..	1	1	2	3	1	2	4	2	1	5	3
96. Other diseases of kidneys	6	1	..	..	..	..	..	..	..	..	1	..	1	1	..	2	..	..	3	3	....	6	....	....	1	5	..	..	3	..	..	1	1	..	1	..	..	..	..
98. Diseases of bladder	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	...	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..
105. Other diseases of the genito-urinary system	3	....	..	..	..	..	..	..	..	..	1	1	..	..	..	1	..	2	1	....	1	2	....	....	3	....	..	2	1	..	..	..	..	..	..	..	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	5	....	..	..	..	..	..	..	..	..	..	..	..	1	1	3	..	4	1	....	4	1	....	....	5	....	..	2	..	2	..	..	1	..	..	..	..	..
109. Gangrene	5	....	..	..	..	..	..	..	..	..	..	..	..	1	1	3	..	4	1	....	4	1	....	...	5	....	.	2	..	2	..	..	1	..	..	..	..	..
IX. DISEASES OF LOCOMOTOR SYSTEM.																																						
Group Total	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	.	..	..	..	..	..	..	..	..	1
113. Diseases of the bones	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
X. MALFORMATIONS.																																						
Group Total	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
116. Congenital malformations (still-births excluded)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	32	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19	13	....	32	....	....	32	....	....	7	5	2	2	3	2	2	1	3	2	1	2
117. Premature birth	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	....	10	....	....	10	....	....	3	1	2	2	1	.	..	..	..	..	..	1
118. Congenital debility	22	22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	9	....	22	....	....	22	....	....	4	4	..	..	2	2	2	1	3	2	1	1
119. XII. OLD AGE. **Group Total**	45	....	..	..	..	..	..	..	..	..	..	..	..	..	11	34	..	22	23	....	13	31	1	2	43	....	4	6	10	5	2	3	2	4	..	3	4	2

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ESSEX.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	117	6	..	..	1	..	1	4	7	31	12	14	18	7	9	7	..	53	64	....	100	17	....	47	70	....	10	11	11	11	10	11	11	6	5	10	9	12
12. Septicæmia	7	....	..	..	..	..	..	1	..	4	..	1	..	1	..	..	..	4	3	....	6	1	....	4	3	....	1	..	1	..	..	1	1	..	1	1	..	1
13. Tuberculosis of lungs	43	2	..	..	..	..	1	..	3	17	5	5	7	1	1	1	..	23	20	....	39	4	....	21	22	....	2	4	5	5	..	4	7	2	2	5	5	2
15. Tuberculous meningitis	3	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	3	....	3	..	....	3	....	....	..	..	..	1	1	..	..	1	..	..	..	..
16. Abdominal tuberculosis	4	....	..	..	..	..	..	..	..	..	2	..	1	1	..	..	..	1	3	....	2	2	....	1	3	....	..	1	..	..	1	..	..	1	..	..	1	..
20. Tuberculosis of other organs	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
21. General Tuberculosis	15	1	..	..	..	..	1	2	5	2	1	1	1	..	..	..	..	6	9	....	11	4	....	6	9	....	1	..	1	2	4	3	1	..	..	1	1	1
25. Cancer of stomach and liver	9	....	..	..	..	..	..	..	..	..	..	2	2	..	4	1	..	4	5	....	6	3	....	....	9	....	1	1	1	1	2	..	1	1	..	..	1
26. Cancer of intestines	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	15	....	..	..	1	..	..	..	..	..	..	3	5	1	1	4	..	5	10	....	15	....	....	2	13	....	1	1	1	..	1	1	..	1	1	3	1	4
31. Tumors	3	....	..	..	..	..	..	..	..	1	1	..	..	..	..	1	..	....	3	....	3	....	....	1	2	....	1	..	..	..	..	2	..	..	..	..	..	..
32. Rheumatism	3	....	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	2	1	....	3	....	....	2	1	....	1	..	..	..	..	..	..	..	..	..	..	2
33. Diabetes	4	....	..	..	..	..	..	..	..	1	1	..	1	..	1	..	..	2	2	....	4	....	....	1	3	....	2	1	1	..	..	..	..	..	..	..	..	..
34. Anæmia, leukæmia	5	1	..	..	..	..	..	1	..	1	..	..	1	1	..	..	..	3	2	....	3	2	....	2	3	....	..	2	..	1	1	..	..	..	..	..	..	1
35. Alcoholism	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	1	....	..	1	....	..	..	..	..	..	..	1	..	..	..	..	..
37. Other General diseases	2	....	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	..	1	..	..	1	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	96	19	6	..	..	1	4	3	3	1	3	4	13	13	14	11	1	46	50	....	79	15	2	45	47	4	9	7	6	15	6	8	9	6	7	10	7	6
38. Encephalitis	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	1	..	..	..	..	..	..	1	..	..
39. Meningitis	20	8	3	..	..	..	4	2	2	..	..	..	1	..	..	..	..	9	11	....	20	....	....	19	1	....	3	2	..	4	..	..	2	4	1	3	..	1
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1	....	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..
41. Other diseases of spinal cord	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..
42. Apoplexy	33	....	..	..	..	..	..	..	..	..	1	2	6	9	8	6	1	15	18	....	23	9	1	7	23	3	3	2	3	4	2	2	3	..	2	5	6	1
44. Paralysis	22	....	..	..	..	..	..	..	..	..	2	2	4	4	5	5	..	11	11	....	16	5	1	2	19	1	1	1	1	4	2	4	2	1	3	1	1	1
47. Other diseases of brain	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
49. Convulsions	13	9	2	..	..	1	..	..	..	1	..	..	..	..	..	..	..	8	5	....	12	1	....	12	1	...	2	1	..	1	1	1	2	1	1	..	..	3
50. Tetanus	2	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	1	1	..	..	..	..	..	..
51. Other diseases of nervous system	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	63	1	..	..	..	..	1	..	..	1	5	8	8	21	14	4	..	31	32	....	39	23	1	10	53	....	5	6	3	5	1	7	4	4	5	7	8	8
52. Pericarditis	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	....	....	2	....	....	....	2	....	..	..	1	..	..	..	1	..	..	..	..	..
53. Endocarditis	10	....	..	..	..	..	..	..	..	..	..	..	1	3	4	1	1	3	7	...	7	3	....	2	8	....	..	..	1	3	..	2	..	..	..	1	1	2
54. Heart disease	38	....	..	..	..	..	..	..	..	1	5	5	5	12	9	1	..	18	20	...	21	16	1	5	33	....	4	6	1	1	..	3	3	3	3	4	4	6
56. Diseases of arteries	10	....	..	..	..	..	..	..	..	..	..	..	1	..	4	3	2	8	2	....	6	4	....	1	9	....	..	..	..	1	1	2	..	..	2	1	3	..
60. Other diseases of circulatory system	3	1	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	....	3	....	3	....	....	2	1	....	1	..	..	..	..	..	..	1	..	1	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	95	27	9	2	1	1	2	..	2	5	3	7	8	13	10	3	2	47	48	....	77	16	2	54	36	5	12	14	16	1	16	6	1	1	5	1	9	10
63. Acute bronchitis	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	..	..	1	..	1	..	..	..	..	..	1
64. Chronic bronchitis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
65. Broncho-pneumonia	12	3	4	..	..	..	..	..	..	..	..	1	2	2	..	..	..	8	4	....	8	4	....	7	5	....	3	..	2	..	1	1	..	1	..	2	2

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ESSEX.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	30	1	1	..	1	..	..	..	2	8	5	5	3	..	3	..	1	27	3	....	19	8	3	13	13	4	1	1	4	..	1	2	7	5	2	3	1	3
120. Suicides	3	....	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	3	....	....	3	....	....	1	2	....	..	..	..	..	..	..	1	1	..	..	..	..	..
121. Fractures and dislocations	4	....	..	..	..	..	..	..	1	1	..	1	..	1	..	..	..	4	....	....	1	2	1	....	3	1	..	..	..	..	..	..	2	..	1	1	..	..
122. Burns and Scalds	2	....	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	..	1	..	..	..	..	1
124. Drowning	5	....	..	..	..	..	..	..	2	1	1	..	..	..	..	..	1	5	....	....	2	1	2	1	1	3	..	..	..	..	..	1	1	2	..	..	..	..
126. Other accidental poisonings	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
127. Other accidental traumatisms	14	....	..	..	..	..	..	..	6	2	2	2	..	2	..	..	..	13	1	....	10	4	....	8	6	....	1	1	3	..	..	1	1	2	1	2	1	1
129. Homicide	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	44	15	2	1	1	..	1	..	..	1	3	4	6	3	6	1	..	28	16	....	36	6	2	23	21	....	6	4	4	3	3	4	3	3	3	2	6	3
130. Dropsy	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	....	1	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
131. Heart failure	17	....	..	..	..	..	1	..	..	1	1	3	3	3	4	1	..	14	3	....	11	5	1	3	14	....	2	1	1	1	2	2	1	1	2	..	4	..
132. Other ill-defined causes	24	14	2	1	1	..	..	..	..	2	1	2	..	1	..	..	..	11	13	....	23	1	....	19	5	....	3	3	2	2	1	2	2	1	2	2	2	..
133. Unknown causes	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	....	....	2	....	..	1	1	....	1	..	..	..	..	..	..	..	..	..	..	1
134. XV. STILL BIRTHS.																																						
Group Total	51	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29	22	....	51	....	....	51	...	....	3	6	2	5	4	5	3	3	7	3	4	6

CAUSES OF DEATHS BY COUNTIES—FRONTENAC (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES. (*A. Epidemic Diseases*).																																						
Grand Total	706	126	13	3	5	3	13	17	16	55	49	54	61	79	109	95	8	378	328	...	503	195	8	311	357	38	76	53	72	49	64	67	58	52	62	52	53	48
Group Total	25	1	..	..	2	..	3	3	..	2	3	2	3	..	3	3	..	11	14	....	18	7	....	14	8	3	5	2	2	2	.	1	1	1	5	1	2	3
1. Typhoid Fever	7	....	..	..	..	..	..	..	..	2	3	..	1	..	1	..	..	5	2	....	5	2	....	3	3	1	..	..	1	..	..	..	1	..	3	..	1	1
2. Malarial Fever	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	...	1	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
4. Measles	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..

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FRONTENAC.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	75	17	5	1	1	..	..	..	3	7	3	4	6	9	10	7	2	41	31	..	52	23	....	42	29	4	11	6	10	4	10	8	5	3	3	7	5	3
63. Acute Bronchitis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....	2	..	....	2	..	....	..	..	1	..	1	..	..	..	..	..	..	..
64. Chronic Bronchitis	7	....	..	..	..	..	..	..	..	..	..	..	..	3	2	2	..	4	3	...	2	5	....	....	7	....	1	1	1	..	2	..	2	..	..	..	..	..
65. Broncho-pneumonia	3	....	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	1	....	2	1	....	3	..	....	..	..	..	..	..	..	1	1	..	..	..	1
66. Pneumonia	58	15	4	1	1	..	..	..	3	5	2	4	4	6	6	5	2	33	25	....	44	14	....	35	19	4	8	5	8	4	6	8	2	2	2	6	5	2
67. Pleurisy	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
68. Congestion of lungs	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
70. Asthma and emphysema	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
72. Other diseases of respiratory system (phthisis ex.)	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	1	....	2	..	....	1	1	....	..	..	..	..	1	..	..	..	1	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	44	20	3	..	..	2	3	..	4	2	2	3	1	3	..	1	24	20	....	38	6	....	32	9	3	2	2	1	1	2	3	2	3	18	5	3	2
77. Gastritis	5	3	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	4	1	....	4	1	....	3	1	1	..	..	..	1	..	..	..	..	1	1	..	2
78. Other diseases of the stomach	3	....	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	3	..	..	2	1	....	....	3	..	1	1	..	..	..	..	..	..	1	..	..	..
80. Diarrhœa and enteritis, (under 2 years)	19	16	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	11	....	18	1	....	19	....	....	..	..	..	..	2	1	2	12	2	..	..
81. Diarrhœa and enteritis, (2 years and over	2	....	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	1	....	2	..	....	2	..	....	..	..	..	..	..	..	..	1	..	1	..
83. Obstruction of intestines	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	..	1	..	1	..
84. Other diseases of intestines	2	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	....	2	..	....	1	1	....	..	..	..	..	1	..	..	..	1	..	..
87. Cirrhosis of liver	3	....	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	2	1	....	3	..	....	1	..	2	..	..	..	..	..	..	..	1	..	1	1	..
89. Other diseases of liver	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
91. Peritonitis, non-puerperal	5	....	..	..	..	..	2	..	2	..	..	1	..	..	..	..	..	2	3	....	4	1	....	3	2	....	..	1	1	..	1	..	1	..	1	..	..	..
92. Appendicitis	2	....	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	..	....	2	..	....	2	..	....	1	..	..	..	..	..	..	1	..	..	..	..
VI. DISEASES OF GENITO URINARY SYSTEM.																																						
Group Total	31	2	..	..	..	..	..	..	5	2	2	5	5	4	6	..	18	13	...	20	11	....	8	21	2	3	3	2	3	2	2	4	4	1	..	3	4
94. Acute nephritis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	..	....	..	1	....	..	..	1	..	..	..	..	..	..	..	..	..
95. Bright's Disease	19	2	..	..	..	..	..	..	2	1	2	3	5	2	2	..	..	11	8	....	11	8	....	5	12	2	1	3	..	1	1	1	2	4	1	..	1	4
96. Other diseases of kidneys	5	....	..	..	..	..	..	..	2	1	..	..	..	1	1	..	..	2	3	....	5	..	....	2	3	....	1	..	..	1	..	1	1	..	..	..	1	..
97. Calculi of urinary tract	2	....	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	1	....	2	..	....	1	1	....	..	..	1	..	..	..	..	..	..	..	1	..
98. Diseases of bladder	3	....	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	3	..	....	....	3	....	....	3	....	1	..	..	..	1	..	1	..	..	..	..	..
105. Othes diseases of the genito-urinary system	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	....	1	..	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	4	....	..	..	..	..	..	..	1	1	1	1	..	..	..	..	..	....	4	....	3	1	....	....	4	....	..	..	..	..	..	1	..	2	..	1	..	..
108. Other causes incident to childbirth	4	....	..	..	..	..	..	..	1	1	1	1	..	..	..	..	..	....	4	....	3	1	....	....	4	....	..	..	..	..	..	1	..	2	..	1	..	..

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CAUSES OF DEATHS BY COUNTIES.—GREY, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	837	161	21	4	10	6	12	17	19	53	44	49	60	84	150	141	6	438	399	....	540	296	1	334	495	9	97	95	95	67	78	58	47	60	63	50	66	61
Group Total	47	10	2	1	4	2	3	2	1	2	1	2	3	1	5	8	..	22	25	....	34	12	1	31	15	1	7	11	5	1	.	1	4	3	4	5	1	5
1. Typhoid Fever	5	....	..	..	..	..	..	..	..	2	1	1	..	1	..	..	..	4	1	....	4	1	....	5	....	....	..	..	..	..	..	1	..	..	1	1	1	1
4. Measles	4	1	..	..	..	..	2	1	.	.	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	..	..	..	..	..	..	..	..	..	..	4
5. Scarlet Fever	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	.	..	..	..	..	..	..	..	..	..
6. Whooping Cough	8	8	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	....	7	1	....	8	....	....	..	.	1	1	..	..	1	2	2	1	..	..
7. Diphtheria and Croup	6	....	..	1	2	2	.	1	..	..	..	..	..	..	..	..	..	2	4	....	6	....	....	6	....	....	..	1	1	..	..	..	..	1	1	2	..	..
8. Influenza	17	....	..	..	1	..	1	..	1	..	..	1	1	..	4	8	..	8	9	....	6	10	1	4	12	1	3	9	1	..	..	..	1	..	..	..	..	..
9. Dysentery	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	....	2	....	....	1	1	....	..	..	..	..	..	..	..	1	..	..	1	..	..
10. Erysipelas	4	....	2	..	..	..	..	..	..	..	..	..	2	..	..	..	..	3	1	....	4	....	....	2	2	....	3	..	..	..	..	..	1	..	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	132	3	1	..	2	..	..	6	2	28	17	18	12	21	18	4	..	60	72	....	100	31	1	38	92	2	20	11	9	18	10	7	7	11	9	10	15	10
12. Septicæmia	3	....	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	1	2	....	2	1	....	....	2	1	..	..	..	..	..	1	..	..	2	..	..	..
13. Tuberculosis of lungs	37	....	..	..	..	..	..	3	1	17	9	4	2	1	..	..	..	13	24	....	32	4	1	17	20	....	7	1	3	2	4	2	3	1	4	3	3	4
15. Tuberculous meningitis	3	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	..	..	1	..	..	2	..	..	..	..	..
16. Abdominal tuberculosis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
21. General tuberculosis	20	1	..	..	1	..	..	..	6	2	6	2	2	..	..	..	..	11	9	....	18	2	....	9	11	....	2	2	2	4	2	..	1	4	..	..	2	1
23. Venereal diseases	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
25. Cancer of stomach and liver	14	....	..	..	..	..	..	..	..	..	..	1	..	8	4	1	..	8	6	....	6	8	....	....	14	....	1	3	1	3	..	..	1	3	..	..	..	2
26. Cancer of intestines	2	....	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	1	....	2	....	....	....	2	....	..	1	..	..	..	..	..	..	..	..	1	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
30. Cancer of other unspecified organs	19	....	..	..	..	..	..	..	..	..	1	1	5	3	8	1	..	8	11	....	12	7	....	1	18	....	3	3	..	1	1	2	..	2	2	2	2	1
31. Tumors	3	....	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	1	2	....	2	1	....	....	3	....	1	..	..	1	..	..	..	1	..	..	..	..
32. Rheumatism	5	....	..	..	..	..	..	1	1	..	..	..	..	3	..	..	..	3	2	....	3	2	....	2	3	....	1	1	1	..	..	..	..	..	..	2	..	..
33. Diabetes	4	....	..	..	..	..	..	1	..	..	..	1	..	1	1	..	..	2	2	....	2	2	....	2	2	....	1	..	..	..	..	..	..	..	..	..	3	..
34. Anæmia, leukæmia	16	1	1	..	..	..	..	..	..	4	2	2	1	1	2	2	..	8	8	....	13	3	....	3	12	1	4	..	2	1	3	1	..	1	..	2	1	1
37. Other General diseases	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	1	..	..	..	..	1	..

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GREY—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	30	....	..	..	..	..	..	..	3	3	..	4	2	4	12	2	..	18	12	....	10	20	....	7	23	....	3	2	5	2	4	2	1	2	5	1	.	3
94. Acute nephritis	2	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	....	....	1	1	....	....	2	....	..	.	..	..	1	..	..	..	..	..	..	1
95. Bright's disease	18	....	..	..	..	..	..	..	3	2	..	2	1	2	8	..	..	8	10	....	5	13	...	5	13	....	1	1	3	2	3	1	1	1	4	..	..	1
96. Other diseases of kidneys	2	....	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	2	....	....	1	1	....	....	2	....	..	..	..	..	..	1	..	..	..	1	..	..
98. Diseases of bladder	5	....	..	..	..	..	..	..	..	1	..	..	..	2	1	1	..	5	....	....	1	4	....	2	3	....	2	..	1	..	..	..	..	..	1	..	..	1
101. Other diseases of uterus	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	1	..	..	..	..	..	1	..	..	..	..
105. Other diseases of the genito-urinary system	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	6	....	..	..	..	..	..	..	3	2	1	..	..	..	..	..	..	....	6	....	6	....	....	....	6	....	..	1	..	2	1	..	..	..	..	2	..	..
107. Puerperal convulsions	2	....	..	..	..	..	..	..	1	..	1	..	..	..	..	..	.	....	2	....	2	....	....	....	2	....	..	1	..	..	..	..	.	..	..	1	..	..
108. Other causes incident to childbirth	4	....	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	....	4	....	4	....	....	....	4	....	..	..	..	2	1	..	..	..	..	1	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	6	....	..	..	..	..	..	..	..	..	..	1	..	1	2	2	..	2	4	....	2	4	...	....	5	1	1	..	..	1	..	1	..	..	1	1	.	1
109. Gangrene	6	....	..	..	..	..	..	..	..	..	..	1	..	1	2	2	..	2	4	....	2	4	....	....	5	1	1	..	..	1	..	1	..	..	1	1	..	1
X. MALFORMATIONS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	1	..	..	.	1	..	..	..	.	..
116. Congenital malformations (still-births excluded)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	1	..	..	..	1	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	36	36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19	17	....	36	....	....	36	....	....	4	6	2	3	2	..	6	3	2	1	4	3
117. Premature birth	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	3	....	11	....	....	11	....	....	1	1	..	1	..	..	2	1	1	..	2	2
118. Congenital debility	25	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	14	....	25	....	....	25	....	....	3	5	2	2	2	..	4	2	1	1	2	1
119. XII. OLD AGE.																																						
Group Total	92	....	..	..	..	..	..	..	..	..	..	..	..	..	28	63	1	40	52	....	14	78	....	9	83	....	17	14	10	14	9	8	2	3	6	3	2	4
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	23	2	1	..	1	..	2	..	1	6	4	2	..	..	2	1	1	19	4	...	19	3	1	10	12	1	..	..	3	2	3	3	1	..	4	1	3	3
120. Suicides	2	....	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	1	....	2	....	....	1	1	....	.	..	..	1	..	..	..	..	..	1	..	..
121. Fractures and dislocations	3	....	1	..	..	..	..	..	..	1	..	..	..	..	..	1	..	3	....	....	2	1	....	1	2	....	..	..	1	..	..	..	..	..	..	2	..	..
122. Burns and scalds	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	..	1	..	..	..	..	..	..	1
124. Drowning	5	....	..	..	1	..	2	..	1	..	1	..	..	..	..	..	..	5	....	....	4	1	....	4	1	....	..	..	..	1	1	..	1	..	1	..	1	..
126. Other accidental poisonings	3	1	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	2	1	....	3	....	....	1	2	....	..	..	..	..	1	..	..	..	..	..	..	..
127. Other accidental traumatisms	7	....	..	..	..	..	..	..	..	5	..	..	..	..	1	..	1	6	1	....	5	1	1	1	5	1	..	..	2	..	1	2	..	..	..	..	..	2
129. Homicide	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..

Causes of Death.	Totals.	Ages. Under 5. 0-1	1-2	3-4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	46	11							2	1	1	2	3	10	9	5	2	26	20	...	28	18	....	15	31	...	5	2	5	5	5	6	5	4	4	2	2	1
130. Dropsy	12	..	..	..	..	..	..	..	..	..	..	..	1	1	4	3	..	7	5	....	4	8	..	....	12	...	2	1	2	..	..	3	..	1	1	2	..	..
131. Heart failure	18	....	..	..	..	..	..	..	2	1	1	..	2	3	5	2	2	7	11	...	10	8	....	3	15	...	1	..	1	4	3	2	2	2	..	..	2	1
132. Other ill-defined causes	16	11	..	..	..	..	..	..	..	..	..	2	..	3	..	..	..	12	4	....	14	2	....	12	4	....	2	1	2	1	2	1	3	1	3	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	36	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	11	....	36	....	....	36	....	....	..	4	3	2	5	6	2	2	3	4	2	3

CAUSES OF DEATH BY COUNTIES.—HALDIMAND (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5. 0-1	1-2	3-4	5	6	7	8	9	10	11	12	13	14	15	16	17	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1. GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	240	46	11	1	1	..	2	3	9	13	8	12	16	43	37	38	.	112	127	1	182	56	2	94	141	5	24	22	26	18	27	16	19	16	19	12	21	20
Group Total	15	3	3	..	..	..	1	2	2	2	..	..	..	2	..	..	..	3	12	...	15	....	..	13	2	....	.	2	2	1	4	3	..	2	..	..	..	1
1. Typhoid Fever	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
4. Measles	2	....	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	....	2	....	2	....	....	....	....	....	..	..	..	1	..	..	1	..	..	..	..	..
6. Whooping Cough	5	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	4	....	5	....	....	5	....	....	..	..	..	..	1	3	1	..	..	..	..	..
7. Diphtheria and Croup	4	...	1	..	..	..	1	2	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	1	..	..	1	..	..	2	..	..	..	..
8. Influenza	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
10. Erysipelas	2	....	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	1	..	..	..	..	..	1
(*B. Other General Diseases.*)																																						
Group Total	15	1	1	..	..	..	1	5	4	3	1	1	1	1	6	2	.	19	2	...	38	7	...	10	35	....	4	2	1	3	5	1	9	4	4	1	3	1
12. Septicæmia	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	1	....	1	1	....	1	1	....	1	..	1	..	..	..	..	..	..	..	..	..
13. Tuberculosis of lungs	9	....	1	..	..	..	..	1	1	3	1	1	..	..	1	..	..	5	4	....	8	1	....	3	6	....	..	2	2	1	2	..	1	1	..	..	..	..
21. General Tuberculosis	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	....	1	....	..	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
25. Cancer of stomach and liver	4	....	..	..	..	..	..	..	..	..	1	..	..	2	1	..	..	3	1	....	2	2	....	....	4	....	1	..	..	..	..	..	2	..	..	..	1	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
30. Cancer of other unspecified organs	13	1	..	..	..	..	..	..	..	..	1	1	3	6	1	..	..	6	7	..	12	1	....	2	11	....	1	..	2	1	2	..	2	2	1	..	..	2
32. Rheumatism	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	2	..	....	2	....	....	1	1	....	..	..	..	..	..	..	1	..	..	..	..	..
33. Diabetes	4	....	..	..	..	..	..	..	..	1	..	..	..	1	1	1	..	1	3	....	4	....	....	1	3	....	1	..	..	1	..	..	1	1	..	..	..	1
34. Anæmia, leukæmia	7	....	..	..	..	..	..	..	..	1	..	..	1	1	1	..	..	1	6	....	5	2	....	1	6	....	..	..	..	..	..	1	4	..	1	..	1	..
37. Other General diseases	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	1	..	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..

HALDIMAND,—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	30	6	1	..	..	..	..	..	..	1	1	..	2	9	7	3	..	15	15	....	21	9	....	12	17	1	3	3	4	3	3	1	4	2	2	1	3	1
41. Other diseases of spinal cord	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
42. Apoplexy	11	1	..	..	..	..	..	..	..	..	..	..	1	3	5	1	..	5	6	....	8	3	....	1	10	....	1	1	..	1	1	1	3	..	..	..	2	1
43. Softening of Brain	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
44. Paralysis	11	..	..	..	..	..	..	..	..	..	..	1	6	2	2	..	..	5	6	....	5	6	....	3	7	1	2	2	1	1	..	..	..	2	1	1	..
49. Convulsions	6	5	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	3	3	....	6	....	....	6	....	....	..	..	3	1	1	..	1	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	19	1	..	..	..	..	..	..	..	1	2	1	2	6	3	3	..	9	10	...	13	6	....	4	15	....	2	1	2	2	2	1	1	1	..	..	2	5
53. Endocarditis	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	....	1	1	....	..	2	....	1	..	..	..	..	..	..	..	..	..	..	1
54. Heart disease	12	..	..	..	..	..	..	..	..	1	2	1	2	4	..	2	..	6	6	....	9	3	....	2	10	....	1	1	1	1	1	..	1	1	..	..	2	3
56. Diseases of arteries	4	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	..	2	2	....	2	2	....	1	3	....	..	..	1	1	1	..	..	..	..	..	..	1
60. Other diseases of circulatory system	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	27	8	3	..	..	..	..	..	..	..	..	1	3	2	2	8	..	11	16	....	18	9	...	15	12	...	2	6	7	3	2	2	..	..	..	..	3	2
63. Acute bronchitis	3	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	2	....	3	....	....	2	1	....	..	..	1	1	..	..	..	..	..	..	1	..
64. Chronic bronchitis	4	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2	..	1	3	....	1	3	....	1	3	....	..	1	3	..	..	..	..	..	..	..	..	..
65. Broncho-pneumonia	4	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	3	....	3	1	....	4	....	....	..	..	..	1	2	1	..	..	..	..	..	..
66. Pneumonia	14	4	2	..	..	..	..	..	..	..	..	1	1	1	1	4	..	7	7	....	10	4	....	8	6	....	2	5	2	..	..	1	..	..	..	..	2	2
70. Asthma and Emphysema	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	....	1	1	....	....	2	....	..	..	1	1	..	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	15	7	2	1	..	..	1	..	..	1	..	..	..	..	2	1	..	4	11	....	12	3	....	12	3	....	2	3	1	1	1	1	1	1	2	2	..	..
74. Tonsilitis	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..	..
77. Gastritis	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..	..
78. Other diseases of the stomach	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	....	1	1	....	1	1	....	..	..	..	1	1	..	..	..	..	..	..	..
80. Diarrhœa and enteritis (under 2 years)	7	5	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	5	....	7	....	....	7	....	....	..	1	1	..	..	1	..	1	1	2	..	..
81. Diarrhœa and enteritis (2 years and over)	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	..	1	....	..	1	....	..	..	..	..	..	..	1	..	..	..	..	..
82. Hernia	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	..	1	....	..	1	....	..	1	..	..	..	..	..	..	..	..	..	..
84. Other diseases of intestines	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
91. Peritonitis (non-puerperal)	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	17	..	..	..	..	..	..	..	1	1	..	2	2	5	4	2	..	11	6	....	13	4	...	3	13	1	1	..	2	1	2	2	1	..	2	2	2	2
95. Bright's disease	16	..	..	..	..	..	..	..	1	1	..	2	2	5	4	1	..	10	6	....	13	3	....	3	12	1	1	..	2	1	2	2	1	..	1	2	2	2
98. Diseases of bladder	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	..	1	....	..	1	....	..	..	..	..	..	..	..	..	1	..	..	..

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CAUSES OF DEATHS BY COUNTIES—HALIBURTON (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29	30-39.	40-49	50-59.	60-69.	70-79.	80 & over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases*).																																					
Grand Total	84	27	3	1	..	1	3	..	4	5	6	6	4	5	10	6	3	44	39	1	71	11	2	48	35	1	7	8	6	14	4	6	4	7	8	7	9	4
Group Total	5	1	..	.	..	..	2	..	1	..	..	..	..	1	..	..	..	5	....	....	5	....	....	4	1	....	..	1	..	3	..	..	..	..	..	1	.	..
6. Whooping Cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
7. Diphtheria and Croup	3	....	.	..	..	..	2	..	1	..	..	..	..	..	..	..	..	3	....	....	3	....	....	3	....	....	..	..	..	3	..	..	..	..	..	..	..	..
8. Influenza	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases*).																																					
Group Total	10	1	..	..	..	..	..	..	2	2	1	1	1	..	2	..	..	5	5	...	9	1	....	6	4	....	2	..	..	1	..	1	1	2	..	2	..	1
13. Tuberculosis of lungs	6	....	.	..	..	..	..	..	2	2	1	1	..	..	..	..	..	2	4	....	6	....	....	5	1	....	1	..	..	.	..	..	1	1	..	2	.	..
15. Tuberculous meningitis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
31. Tumors	1	. .	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
32. Rheumatism	2	...	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	1	1	....	....	2	....	..	..	..	1	..	..	..	..	..	..	..	1
II. DISEASES OF NERVOUS SYSTEM																																					
Group Total	13	5	1	..	..	..	1	..	..	1	3	..	1	1	..	..	..	7	6	....	13	...	....	10	3	....	..	4	1	2	1	1	1	2	..	..	..	1
39. Meningitis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	2	..	..	..	..	..	..	..	..	..	..
43. Softening of the brain	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
44. Paralysis	2	....	.	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	..	..	..	1	..	..	..	1
46. Other forms of mental disease	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
48. Epilepsy	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
49. Convulsions	5	3	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	..	1	1	1	1	..	..	..	..	..	..	..
51. Other diseases of nervous system	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	...	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	4	....	..	..	..	..	..	..	..	..	..	1	1	1	..	..	1	1	3	....	3	1	....	....	4	....	..	.	..	2	..	1	..	1	..	..	..	..
51. Heart Disease	4	....	..	..	..	..	..	..	..	..	..	1	1	1	..	..	1	1	3	....	3	1	....	....	4	....	..	..	..	2	.	1	.	1	..	..	..	..

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CAUSES OF DEATHS BY COUNTIES—HALTON (including Municipalties of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	**263**	**46**	**11**	**2**	**1**	..	**3**	**2**	**4**	**12**	**18**	**15**	**16**	**26**	**58**	**34**	**5**	**134**	**119**	....	**184**	**71**	**8**	**102**	**136**	**25**	**18**	**28**	**35**	**17**	**23**	**28**	**13**	**18**	**22**	**21**	**18**	**22**
Group Total	8	3	1	..	..	..	..	..	..	2	..	..	..	1	1	..	..	3	5	....	5	1	2	5	3	....	..	..	1	1	1	..	..	2	1	1	..	1
1. Typhoid Fever	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
6. Whooping Cough	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	....	3	....	....	3	....	....	..	..	..	..	..	..	..	2	1	..	..	..
7. Diphtheria and Croup	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
8. Influenza	3	....	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	2	1	....	....	1	2	....	3	....	..	..	1	1	1	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	25	....	..	..	..	..	1	..	2	2	3	2	7	3	4	1	..	7	18	....	20	5	....	12	13	....	2	5	7	..	1	1	2	1	1	2	1	2
13. Tuberculosis of lungs	7	....	..	..	..	..	..	..	1	1	2	2	..	..	1	..	..	3	4	....	6	1	....	4	3	....	2	1	2	..	..	..	1	1	..	..	..	..
14. Tuberculosis of larynx	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
21. General tuberculosis	4	....	..	..	..	..	..	..	1	..	1	..	2	..	..	..	..	1	3	....	4	....	....	3	1	....	..	1	1	..	1	1	..	..	..	..	..	..
23. Venereal diseases	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
25. Cancer of stomach and liver	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	2	....	....	1	1	....	..	..	1	..	..	..	..	..	1	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
30. Cancer of other unspecified organs	5	....	..	..	..	..	..	..	..	..	..	..	2	1	1	1	..	1	4	....	2	3	....	1	4	....	..	3	..	..	..	..	..	..	..	1	..	1
33. Diabetes	2	....	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	..	..	..	..	1	1	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	....	2	....	1	1	....	....	2	....	..	..	2	..	..	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	50	5	5	1	..	..	..	1	..	2	5	3	2	7	11	7	1	27	23	....	32	15	3	15	28	7	5	5	5	4	6	5	5	3	6	2	2	2
39. Meningitis	5	1	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	4	1	....	3	2	....	4	1	....	1	..	1	1	..	1	..	..	1	..	..	..
41. Other diseases of spinal cord	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
42. Apoplexy	23	....	1	..	..	..	..	..	..	2	2	2	1	7	4	4	..	11	12	....	13	9	1	3	16	4	3	2	1	1	5	..	1	2	5	1	1	1
43. Softening of Brain	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
44. Paralysis	13	....	..	..	..	..	..	..	..	..	2	..	1	..	6	3	1	6	7	....	7	4	2	2	8	3	..	3	1	2	..	2	2	1	..	1	1	..
48. Epilepsy	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
49. Convulsions	6	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	..	6	....	....	6	....	....	1	..	1	..	1	1	1	..	..	1	..	..

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VIII. DISEASES OF SKIN.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	...	1	....	..	..	..	..	..	1	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	2	...	12	....	....	12	....	....	..	..	2	..	1	2	..	..	2	2	..	3
117. Premature birth	9	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	2	....	9	....	....	9	...	....	..	..	2	..	1	2	..	..	2	1	..	1
118. Congenital debility	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	....	....	3	....	....	3	....	....	..	..	..	..	..	..	..	..	..	1	..	2
119. XII. OLD AGE.																																						
Group Total	12	....	..	..	..	..	..	..	..	..	..	..	..	..	4	8	..	6	6	....	6	5	1	1	10	1	..	2	4	1	..	1	..	..	2	..	1	1
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	14	1	..	..	1	..	1	..	..	..	1	3	..	..	2	3	2	10	4	....	9	4	1	6	4	4	..	..	3	..	2	..	2	2	1	1	3	..
120. Suicides	2	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	2	....	....	....	2	....	....	1	1	..	..	..	..	..	1	..	..	1	..	..	..
121. Fractures and dislocations	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
122. Burns and scalds	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	1	..
127. Other accidental traumatisms	9	....	..	..	1	..	..	..	..	..	1	2	..	..	1	3	1	6	3	....	7	1	1	4	2	3	..	..	2	..	1	..	2	1	1	1	1	..
128. Injuries at birth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	31	7	..	..	..	..	..	..	1	1	2	1	1	8	5	4	1	17	14	....	23	8	....	13	16	2	1	2	1	4	1	2	1	5	4	6	1	3
130. Dropsy	3	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	3	....	2	1	....	2	1	..	..	..	..	..	..	..	..	3	..	..	..	..
131. Heart failure	12	2	..	..	..	..	..	..	..	..	1	1	1	3	2	2	..	6	6	....	9	3	....	3	7	2	..	1	..	1	1	..	1	2	1	4	..	1
132. Other ill-defined causes	10	4	..	..	..	..	..	..	..	..	..	..	..	3	2	1	..	8	2	....	9	1	....	5	5	....	..	1	..	2	..	2	..	..	2	2	..	1
133. Unknown causes	6	1	..	..	..	..	..	1	1	1	..	..	..	1	..	1		3	3	....	3	3	....	3	3	....	1	..	1	1	..	..	..	..	1	..	1	1
134. XV. STILL BIRTHS.																																						
Group Total	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	....	6	...	....	6	....	....	1	..	1	..	..	..	..	..	1	..	2	1

CAUSES OF DEATHS BY COUNTIES IN HASTINGS, 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not given.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. Jan.	Feb.	March	April	May.	June.	July	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1. GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	851	198	22	4	11	3	16	18	20	58	42	55	74	79	128	121	2	424	425	2	668	167	16	392	433	26	103	96	90	64	78	54	60	71	56	72	44	63
Group Total	53	10	2	1	5	1	3	4	3	9	2	1	4	3	3	2	..	27	26	...	50	3	....	39	13	1	8	9	1	7	4	1	3	2	3	3	4	8
1. Typhoid Fever	15	....	..	..	..	..	..	1	3	6	1	..	2	2	..	..	..	10	5	...	14	1	....	10	4	1	3	2	..	3	2	1	..	..	..	1	2	1
4. Measles	3	1	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	2	...	3	....	....	3	....	....	..	..	..	1	..	..	2	..	..	..	..	..
5. Scarlet Fever	4	....	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	1	3	...	3	1	..	4	....	..	..	..	..	..	..	1	..	..	..	..	..	3
6. Whooping Cough	4	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	...	4	..	..	4	....	....	1	..	..	..	..	..	..	1	1	..	1	..
7. Diphtheria and Croup	12	1	..	1	1	1	3	3	..	2	..	..	..	..	..	..	..	7	5	...	12	..	..	12	....	....	..	3	..	..	1	..	..	..	2	2	1	3
8. Influenza	12	4	..	..	..	..	..	..	..	..	1	1	1	1	3	1	..	5	7	...	11	1	....	5	7	...	3	3	1	3	1	..	..	..	..	..	..	1
9. Dysentery	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	...	2	..	..	1	1	..	..	1	..	..	..	..	1	..	..	..	..	..
10. Erysipelas	1	...	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	...	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																						
Group Total	116	3	..	..	1	..	1	6	5	18	11	17	18	18	13	5	..	44	72	...	99	15	2	38	78	....	13	14	12	9	16	7	12	6	10	6	4	7
12. Septicæmia	4	....	..	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	4	...	2	2	....	..	4	....	..	2	..	..	2	..	..	..	..	..	..	..
13. Tuberculosis of lungs	38	1	..	..	..	..	1	3	3	9	5	5	8	1	2	..	..	19	19	...	36	2	....	17	21	....	1	7	5	6	3	..	4	2	2	3	1	1
15. Tuberculosis meningitis	2	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	...	2	....	....	2	....	....	1	..	..	..	1	..	..	..	..	..	..	..
19. White swelling	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	...	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
21. General Tuberculosis	13	....	..	..	..	..	..	1	2	4	1	2	3	..	..	..	..	7	6	...	12	....	1	5	8	....	2	2	1	..	2	2	2	..	1	1	..
22. Scrofula	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	...	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
25. Cancer of stomach and liver	9	..	..	..	..	..	..	..	..	..	..	2	1	4	2	..	..	3	6	..	7	2	....	1	8	....	1	1	..	..	2	1	..	..	4	..	..	..
27. Cancer of genital organs	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	2	...	2	....	....	2	....	....	..	..	..	1	1	..	..	..	..	..	..	..
28. Cancer of breast	3	....	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	3	...	2	1	....	....	3	....	1	..	1	..	1	..	..	..	..	..	..	..
29. Cancer of skin	2	....	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	1	...	2	....	....	....	3	....	..	..	1	..	..	..	1	..	..	..	..	..
30. Cancer of other unspecified organs	22	....	..	..	..	..	..	..	..	1	5	4	5	..	4	3	..	5	17	...	17	4	1	4	18	....	4	2	2	1	2	1	1	1	..	..	3	5
31. Tumors	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	2	...	2	....	....	....	2	....	..	..	..	1	..	..	..	1	..	..	..	..
33. Diabetes	5	....	..	..	..	..	..	1	..	..	..	..	..	..	4	..	..	2	3	...	2	3	....	2	3	....	..	..	..	1	..	1	..	..	1	..	..	..
34. Anæmia, leukæmia	10	....	..	..	..	..	..	1	..	2	..	..	3	3	1	..	..	4	6	...	9	1	....	4	6	....	..	..	..	..	1	3	2	1	1	1	..	1
37. Other general diseases	2	....	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	1	1	...	3	....	....	1	1	....	..	..	..	..	1	..	..	1	..	..	..	..

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	91	24	4	..	2	..	3	..	1	3	3	8	8	10	15	10	..	47	44	...	74	16	1	42	48	1	13	11	9	7	10	3	6	11	7	6	3	5
38. Encephalitis	3	1	1	..	..	..	..	..	..	..	..	1	..	.	..	..	..	3	..	..	3	..	..	2	1	..	..	..	..	..	1	..	..	1	1	..	..	..
39. Meningitis	12	7	2	..	2	..	1	..	..	..	..	..	..	..	..	..	..	8	4	..	12	..	..	12	..	..	1	2	1	1	1	..	1	..	2	1	1	1
41. Other diseases of spinal cord	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	1	1	..	1	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..
42. Apoplexy	31	1	..	..	..	..	..	..	1	..	..	4	5	7	7	6	..	19	12	..	22	9	..	6	24	1	4	5	3	2	3	..	2	4	1	4	1	2
43. Softening of the Brain	2	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	..	2	..	..	..	2	..	..	1	..	..	..	..	..	1	..	..	..	..
44. Paralysis	13	..	..	..	..	..	..	..	..	..	1	1	1	2	5	3	..	5	8	..	8	4	1	..	13	..	2	..	1	1	2	1	2	1	1	1	..	1
46. Other forms of mental disease	2	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	..	1	1	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	1
48. Epilepsy	6	2	..	..	..	..	..	..	..	..	2	1	1	..	..	..	..	3	3	..	6	..	..	4	2	..	..	..	3	..	..	1	..	2	..	..	..	..
49. Convulsions	14	12	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	8	6	..	14	..	..	13	1	..	4	..	1	2	3	1	..	2	1	..	..	..
51. Other diseases of nevous system	6	..	..	..	..	2	..	..	2	..	..	..	..	..	1	1	..	..	6	..	5	1	..	4	2	..	2	2	..	..	..	..	1	..	1	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	65	2	..	..	..	..	1	..	1	3	2	2	14	7	23	10	..	35	30	...	43	20	2	16	44	5	6	6	7	3	4	4	7	9	3	7	4	5
52. Pericarditis	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..
53. Endocarditis	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	..	1	1	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	1
54. Heart Disease	53	1	..	..	..	..	1	..	1	2	2	2	13	7	19	5	..	29	24	..	38	14	1	13	27	3	6	5	6	2	4	3	5	7	3	5	3	4
55. Angina pectoris	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	2	1	..	1	2	..	..	2	1	..	..	..	1	..	..	1	..	..	1	..	..
56. Disease of arteries	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	..	1	1	..	1	1	..	..	1	..	..	..	..	..	1	..	..	..	..
57. Embolism and thrombosis	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	1	..	1	1	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..
58. Diseases of veins	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..
60. Other diseases of circulatory system	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	133	34	9	2	2	..	1	1	2	4	9	12	13	10	21	13	..	62	71	...	107	24	2	61	66	6	20	18	24	12	15	6	4	3	4	10	5	12
63. Acute bronchitis	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	..	4	..	..	4	..	..	1	1	..	1	..	1	..	..	..	..	..	..
64. Chronic bronchitis	12	..	..	..	..	..	..	..	..	..	..	..	2	2	4	4	..	4	8	..	8	4	..	1	9	2	1	..	1	2	1	..	..	1	..	4	..	2
65. Broncho-pneumonia	14	7	2	..	..	1	..	..	..	..	..	..	1	1	1	1	..	4	10	..	12	1	1	10	4	..	1	2	1	1	2	2	..	1	2	1	..	1
66. Pneumonia	85	20	6	2	2	..	1	2	2	7	11	8	7	12	5	..	39	46	..	68	16	1	40	42	3	15	14	20	6	11	1	3	1	2	3	5	4
67. Pleurisy	4	..	1	..	..	..	..	..	..	1	..	..	1	..	1	..	..	2	2	..	4	..	..	2	2	..	..	..	1	..	1	..	..	..	..	..	..	2
68. Congestion of lungs	7	2	..	..	..	..	..	..	..	..	1	1	..	3	..	..	..	7	..	..	5	2	..	3	4	..	1	..	1	1	..	2	..	..	..	..	..	2
70. Asthma and emphysema	3	..	..	..	..	..	..	..	1	..	..	..	..	..	2	..	..	1	2	..	2	1	..	..	3	..	1	..	..	..	..	1	..	..	1	..	..	..
71. Hemorrhage of lungs	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
72. Other diseases of respiratory system, phthisis excepted	3	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	1	..	3	..	..	1	1	1	..	1	..	1	..	..	..	..	..	1	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	80	33	7	..	..	1	1	1	2	6	3	3	6	7	7	3	..	34	46	...	68	12	....	56	22	2	9	7	6	2	6	5	3	15	12	10	4	1
74. Tonsilitis	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
75. Other diseases of pharynx	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..
76. Ulcer of stomach	4	..	..	..	..	..	..	1	1	1	..	..	1	..	..	..	..	..	4	..	3	1	..	1	2	1	..	1	1	..	..	1	..	..	1	..	..	..
77. Gastritis	13	6	..	..	..	..	..	..	1	..	..	..	..	4	1	1	..	6	7	..	10	3	..	9	4	..	3	2	1	..	..	..	1	3	..	2	1	..
78. Other diseases of stomach	4	..	..	..	..	..	..	..	..	..	1	1	1	..	1	..	..	4	..	..	3	1	..	2	1	1	..	..	..	..	..	1	1	..	..	1	..	..
80. Diarrhœa and enteritis, (under 2 years)	28	24	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	17	..	28	..	..	28	..	..	1	..	..	1	1	1	1	10	6	5	1	1

| | | |

HASTINGS.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	74	14	..	..	1	1	1	..	..	5	4	3	5	8	19	11	2	38	36	...	59	10	5	29	42	3	5	14	6	5	5	6	5	4	5	9	4	6
130. Dropsy	3	....	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	1	2	...	2	1	....	....	3	....	..	..	..	..	1	..	1	..	..	1	..	..
131. Heart Failure	42	1	..	..	..	1	..	..	3	3	2	3	8	12	9	..	23	19	...	32	6	4	11	29	2	2	8	5	4	..	5	3	3	5	1	3
132. Other Ill-defined Causes	9	1	..	..	..	..	..	..	1	..	1	1	..	..	4	1	..	5	4	...	8	1	....	2	7	....	2	2	..	1	..	..	..	..	..	2	1	1
133. Unkown causes	20	12	..	..	1	1	..	..	..	1	1	..	..	..	2	..	2	9	11	...	17	2	1	16	3	1	1	4	1	..	4	1	1	1	2	1	2	2
134. XV. STILL-BIRTHS.																																						
Group Total	42	42	..	..		..	..	..	..	..	..	..	..	..	..	..	..	24	17	1	42	....	....	42	....	....	4	2	2	1	4	3	4	5	2	8	3	4

CAUSES OF DEATHS BY COUNTIES—HURON (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																				
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not Stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33	32	34	35	36	37	38
I.—GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	726	119	9	9	6	..	15	12	11	42	50	36	63	93	123	130	6	365	361	..	435	278	13	267	445	14	73	73	90	67	70	48	45	44	54	61	54	47
Group Total	28	4	2	2	1	..	2	..	..	6	4	..	..	1	1	5	..	16	12	...	21	7	....	18	10	....	5	2	4	1	1	2	..	2	3	..	2	6
1. Typhoid Fever	10	....	..	..	..	..	..	..	..	5	4	..	..	1	....	..	..	5	5	....	10	....	....	6	4	....	2	..	2	..	..	..	..	..	1	..	2	3
3. Smallpox	1	....	..	..	..	..	..	..	..	1	..	..	..	..	....	..	..	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
5. Scarlet Fever	2	....	1	1	..	..	..	..	..	..	..	..	..	..	....	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	..	1	..	..	..	..
4. Diphtheria and Croup	4	....	1	..	1	..	2	..	..	..	..	..	..	..	....	..	..	2	2	....	4	....	....	4	....	....	..	..	..	..	..	1	..	..	..	..	..	3
7. Diphtheria and Croup	6	3	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	4	2	....	3	3	....	3	3	....	2	1	2	..	..	1	..	..	..	..	..	..
8. Influenza	3	....	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	1	2	....	....	3	....	1	2	....	..	1	..	..	1	..	..	1	..	..	..	..	..
9. Dysentery	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	....	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	..	2	..	..
10. Erysipelas																																						

(*B. Other General Diseases.*)

Group Total	123	1	1	1	1	..	2	3	5	12	22	12	22	23	11	3	4	50	73	....	99	23	1	40	80	3	9	5	19	12	11	7	10	10	9	13	6	12
12. Septicæmia	3	....	..	..	..	..	1	1	..	1	..	..	..	..	..	..	..	2	1	....	2	1	....	2	1	....	..	..	1	..	..	..	..	2	..	..	..	..
13. Tuberculosis of lungs	31	....	..	..	..	..	..	3	7	9	2	3	5	1	..	1	1	15	16	....	30	1	....	15	16	....	1	..	11	3	2	2	3	2	1	..	3	3
15. Tuberculous meningitis	2	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	....	2	..	....	2	..	....	..	..	1	..	..	1	..	..	..	..	..	..
17. Pott's disease	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	....	1	..	....	..	1	....	..	..	..	..	..	..	1	..	..	..	..	..
21. General Tuberculosis	16	....	..	..	..	..	2	2	2	4	2	1	1	1	..	1	..	8	8	....	14	2	....	9	7	....	2	2	1	2	1	..	1	1	1	3	..	2
24. Cancer of mouth	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	..	....	..	2	....	..	2	....	..	1	..	..	..	..	..	..	..	1	..	..
25. Cancer of stomach and liver	16	....	..	1	..	..	..	..	..	1	2	4	5	2	1	..	..	6	10	....	10	5	1	3	12	1	1	..	2	2	1	2	..	2	2	1	2	1
26. Cancer of intestines	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	....	1	..	....	..	1	....	..	..	..	..	..	1	..	..	..	..	..	..
27. Cancer of genital organs	3	....	..	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	3	....	3	..	....	1	1	1	..	..	..	..	1	..	..	..	1	1	..	..
30. Cancer of other unspecified organs	13	....	..	..	..	..	..	..	..	..	2	2	6	2	..	1	4	9	....	7	6	....	2	10	1	....	..	..	1	1	..	3	2	..	2	1	..	3
31. Tumors	3	....	..	..	..	..	..	..	..	..	..	1	..	2	..	..	2	1	....	3	..	....	..	3	....	..	..	1	..	1	..	..	..	..	..	..	..	1
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	....	1	..	....	..	1	....	..	..	..	..	..	..	..	..	..	..	..	..
33. Diabetes	6	....	..	..	1	..	..	..	..	1	1	..	3	..	..	..	..	3	3	....	6	..	....	1	5	....	1	..	..	..	1	..	..	..	..	1	3	..
34. Anæmia, leukæmia	22	....	..	..	..	..	..	..	1	5	3	7	2	3	1	..	5	17	....	18	5	....	2	20	....	4	2	1	3	2	3	1	1	2	2	..	1
37. Other General diseases	3	....	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	3	....	3	..	....	3	..	....	..	..	..	..	1	..	..	..	1	..	1	..	1
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	101	12	3	3	..	..	1	4	2	3	2	6	7	15	25	18	..	49	52	....	58	42	1	37	61	....	8	17	10	8	11	8	8	5	9	6	8	3
38. Encephalitis	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	1	..	..	..	..	..	..	..	..	..	..
39. Meningitis	8	2	1	..	..	..	..	2	1	..	..	1	..	1	..	..	..	5	3	....	8	..	....	7	1	....	1	1	4	..	..	2	..	..	..	..	..	..
41. Other diseases of spinal cord	4	1	..	1	..	..	..	..	..	1	..	..	1	..	..	..	..	1	3	....	3	1	....	3	1	....	..	..	1	..	1	..	..	..	1	..	..	1
42. Apoplexy	35	....	..	..	..	..	..	..	..	1	3	3	3	13	12	..	16	19	....	13	21	1	3	32	....	1	5	2	4	4	2	3	2	2	3	6	1
43. Softening of Brain	2	....	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	2	..	....	2	..	....	1	1	....	1	..	1	..	..	..	..	..	..	..	..	..
44. Paralysis	27	1	..	1	..	..	..	..	..	..	1	1	3	7	7	6	..	13	14	....	12	15	....	5	22	....	1	8	2	2	3	..	..	2	5	2	1	1
47. Other diseases of brain	2	....	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	..	....	1	1	....	1	1	....	1	..	..	1	..	..	..	..	..	..	..	..
48. Epilepsy	3	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	3	1	....	2	1	....	..	..	..	..	..	..	..	..	..	..	1	..
49. Convulsions	10	8	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	5	5	....	10	..	....	9	1	....	2	..	..	..	1	3	3	..	..	1	..	..
51. Other diseases of the nervous system	9	....	2	..	..	..	1	1	..	..	..	..	..	2	3	..	..	7	2	....	6	3	....	5	4	....	1	2	..	1	1	..	2	1	1	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	61	2	..	..	..	..	1	1	1	3	4	2	7	13	16	11	..	26	35	....	29	30	2	10	50	1	5	10	6	6	5	5	6	3	2	3	7	3
53. Endocarditis	9	1	..	..	..	..	..	1	..	2	..	1	..	3	1	..	..	3	6	....	5	3	1	2	7	....	1	..	1	3	..	..	1	..	..	1	1	1
54. Heart disease	38	1	..	..	..	..	1	..	..	1	4	1	6	7	10	7	..	17	21	....	18	19	1	7	30	1	2	8	4	3	4	4	3	1	1	2	1	2
55. Angina pectoris	7	....	..	..	..	..	..	..	..	..	..	..	..	3	2	2	..	3	4	....	3	4	....	....	7	....	1	1	1	..	..	..	..	2	..	..	2	..
56. Diseases of arteries	6	....	..	..	..	..	..	..	..	..	..	..	1	..	3	2	..	3	3	....	2	4	....	....	6	....	..	1	..	..	1	1	2	..	1	..	..	..
58. Embolism and thrombosis	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	1	..	....	1	..	....	1	..	..	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	112	20	3	1	2	..	5	1	1	5	6	7	6	13	2	21	1	53	59	....	57	53	2	38	62	2	14	18	20	11	11	4	3	2	3	10	11	5
61. Diseases of larynx	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	1	..	....	..	1	....	..	..	1	..	..	..	..	..	..	..	..	..
63. Acute bronchitis	8	5	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	5	3	....	6	2	....	6	2	....	2	1	2	..	2	..	..	..	..	1	..	..
64. Chronic bronchitis	9	....	..	..	..	..	..	..	..	..	..	..	3	4	2	..	..	4	5	....	3	6	....	1	8	....	3	1	2	1	..	..	..	..	..	..	..	2
65. Broncho-pneumonia	14	7	1	..	..	..	1	1	..	..	1	1	..	7	1	..	..	7	7	....	10	4	....	11	3	....	1	1	..	1	4	3	1	..	..	..	..	..
66. Pneumonia	64	6	1	1	2	..	3	..	1	4	4	6	5	8	10	12	1	30	34	....	31	31	2	26	36	2	5	11	15	9	3	1	2	1	1	4	6	3
67. Pleurisy	5	1	..	..	..	..	..	..	..	..	1	..	..	..	2	1	..	2	3	....	3	2	....	..	3	....	..	..	..	..	2	..	..	..	1	1	1	..
68. Congestion of lungs	4	1	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	2	2	....	1	3	....	1	3	....	..	..	..	..	..	..	..	..	1	1	2	..
70. Asthma and emphysema	7	....	..	..	..	1	..	..	1	..	..	1	1	2	1	..	..	3	4	....	2	5	....	1	6	....	..	1	..	..	..	..	..	1	..	3	2	..

HURON—*Concluded*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	56	12	..	1	..	..	1	..	2	2	6	5	6	6	12	3	..	34	22	....	40	16	....	21	34	1	4	1	6	5	3	2	5	7	10	8	2	3
77. Gastritis	7	3	..	..	..	..	..	..	..	1	1	..	..	1	1	..	..	6	1	....	4	3	....	5	2	....	2	..	1	..	..	..	..	1	1	2	..	..
78. Other diseases of the stomach	7	2	..	..	..	..	..	..	..	1	..	3	..	1	..	..	..	5	2	....	6	1	....	4	2	1	1	..	2	1	..	..	..	..	1	2	..	..
80. Diarrhœa and enteritis (under 2 years)	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	3	....	7	....	....	7	....	....	..	..	..	1	..	1	..	1	3	..	..	1
81. Diarrhœa and enteritis (2 years and over)	6	....	..	1	..	..	..	..	..	1	..	1	..	1	2	..	..	2	4	....	2	4	....	1	5	....	1	1	..	..	..	..	..	1	2	1	..	..
82. Hernia	2	....	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	..	..	1	..	..	1	..	..
83. Obstruction of intestines	6	....	..	..	..	..	..	..	..	..	1	..	1	3	1	..	..	3	3	....	2	4	....	....	6	....	..	..	..	1	..	1	..	1	1	1	1	..
84. Other diseases of intestines	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
87. Cirrhosis of liver	7	....	..	..	..	..	..	..	..	2	1	..	3	1	..	..	..	5	2	....	6	1	....	1	6	..	..	..	2	..	2	..	..	..	1	1	..	1
88. Biliary calculi	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
89. Other diseases of liver	4	..	..	..	..	..	..	..	1	..	..	..	2	1	..	..	..	3	1	..	4	....	....	1	3	....	..	..	1	..	..	1	..	2	..	..	..	..
91. Peritonitis, non-puerperal	3	....	..	..	..	..	..	..	1	1	..	..	..	..	1	..	..	1	2	....	2	1	....	1	2	....	..	..	..	1	..	..	2	..	..	..	..	..
92. Appendicitis	5	....	..	..	..	..	1	..	..	..	1	1	..	..	2	..	..	3	2	....	4	1	....	1	4	....	..	..	..	1	..	..	2	1	..	1	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	48	....	..	..	..	..	..	2	..	4	3	2	8	8	9	12	..	30	18	....	22	24	2	9	37	2	3	9	6	5	5	2	3	4	4	2	3	2
94. Acute nephritis	4	....	..	..	..	..	..	..	..	3	..	..	..	..	1	..	..	3	1	....	3	1	....	3	1	....	..	3	1	..	..	..	..	..	..	..	..	..
95. Bright's disease	29	....	..	..	..	..	1	..	1	3	..	7	8	3	6	..	..	19	10	....	13	15	1	5	22	2	3	3	3	3	3	1	1	1	4	2	2	2
96. Other diseases of kidneys	7	....	..	..	..	..	1	..	..	..	2	1	..	..	3	..	..	..	7	....	5	2	....	1	6	....	..	1	..	1	1	1	..	2	..	1	..	..
98. Diseases of bladder	5	....	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	5	....	....	1	4	....	....	5	....	..	2	..	1	1	..	1	..	..	..	..	..
150. Other diseases of the genito-urinary system	3	....	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3	....	....	...	2	1	....	3	...	..	..	2	..	..	..	1	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	2	..	..	..	..	..	..	..
106. Puerperal septiæmia	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
107. Puerperal convulsions	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	39	39	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	15	....	39	....	....	39	....	....	2	3	7	2	9	2	2	3	4	3	1	1
117. Premature birth	14	14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	6	....	14	....	....	14	....	....	..	1	3	..	4	1	2	..	2	1	..	..
118. Congenital debility	25	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	9	....	25	....	....	25	....	....	2	2	4	2	5	1	..	3	2	2	1	1
119. XII. OLD AGE.	69	....	..	..	..	..	..	..	..	..	..	..	..	..	18	51	..	32	37	....	5	62	2	....	67	2	13	5	5	8	4	6	3	4	5	4	7	5
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	14	....	..	1	..	..	3	..	..	3	..	1	2	3	1	..	..	12	2	....	8	5	1	7	7	....	..	1	1	2	..	2	1	1	2	2	2	..
120. Suicides	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..
121. Fractures and dislocations	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..
122 Burns and scalds	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..	..
124. Drowning	3	....	..	..	..	..	1	..	..	1	..	..	..	1	..	..	..	3	....	....	2	1	....	2	1	....	..	..	..	1	..	..	1	..	1	..	..	..	..

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	801	174	37	14	9	5	24	12	20	48	41	41	51	87	129	102	4	444	357	....	594	193	14	365	420	18	91	82	75	87	72	47	48	57	72	75	49	48
Group Total	49	8	11	4	3	3	6	..	..	3	2	1	1	2	4	1	..	33	16	....	41	5	....	38	11	....	4	7	3	6	4	2	1	6	5	5	2	4
1. Typhoid Fever	9	....	1	..	..	..	1	..	..	3	1	1	..	2	..	..	..	5	4	....	9	....	....	5	4	....	1	..	..	..	1	2	..	2	2	1	..	..
4. Measles	7	1	3	1	1	1	..	..	..	..	..	..	..	..	..	..	..	5	2	....	7	....	....	7	....	....	1	1	2	2	1	..	..	..	..	..	..	..
5. Scarlet Fever	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	6	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	....	6	....	....	6	....	....	..	..	..	..	1	2	..	..	1	2	..	..
7. Diphtheria and Croup	9	....	..	1	1	2	5	..	..	..	..	..	..	..	..	..	..	9	....	....	8	1	....	8	1	....	1	1	..	2	1	..	..	1	..	..	..	..	3
8. Influenza	6	2	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3	3	....	3	3	....	3	3	....	1	2	..	..	..	..	..	..	..	1	2	..
9. Dysentery	11	3	2	2	..	..	..	..	..	..	1	..	1	..	2	..	..	7	4	....	10	1	....	8	3	....	..	1	..	1	..	1	3	2	1	..	..	1
126. Other accidental poisonings	2	....	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	1	..	1	..	..	..	..	..	..
127. Other accidental traumatisms	6	....	..	..	..	..	1	..	..	1	..	1	1	1	1	..	..	5	1	....	2	3	1	2	4	....	..	1	..	..	..	..	..	..	1	2	2	..
XIV. ILL-DEFINED DISEASES																																					
Group Total	57	13	..	..	2	..	..	1	..	3	3	..	5	11	12	6	1	31	26	....	39	16	2	22	32	3	9	1	4	7	6	5	3	2	2	8	4	6
130. Dropsy	3	....	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	2	1	....	2	1	....	1	2	....	..	..	..	..	..	..	1	1	..	..	1	..
131. Heart failure	29	....	..	..	..	..	..	1	..	2	..	..	4	7	10	5	..	16	13	....	17	11	1	6	22	1	6	1	1	3	2	2	2	1	1	5	1	4
132. Other ill-defined causes	16	4	..	..	2	..	..	..	..	1	2	..	..	4	2	..	1	7	9	....	11	4	1	6	8	2	2	..	2	3	1	3	..	..	..	1	1	1	2
133. Unknown causes	9	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	3	..	9	....	....	9	....	....	1	..	1	1	1	3	..	..	..	..	2	1	..
134. XV. STILL BIRTHS.																																					
Group Total	16	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	8	....	16	....	....	16	....	....	1	1	2	..	2	3	1	1	1	2	1	1

CAUSES OF DEATHS BY COUNTIES—KENT (including Municipalities of all classes), 1907.

KENT.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	37	37	38
(B. Other General Diseases.)																																					
Group Total	113	2	1	1	1	..	4	4	7	20	10	12	13	21	13	3	1	53	60	....	97	16	....	42	71	....	10	8	9	11	15	9	7	7	10	11	7	9
12. Septicæmia	4	....	..	..	1	..	..	..	..	1	..	..	..	2	..	..	..	2	2	....	3	1	....	1	3	....	..	..	..	1	2	..	1	..	..	..	..	..
13. Tuberculosis of lungs	33	....	..	..	..	..	..	2	2	11	5	5	1	6	1	..	..	12	21	....	32	1	....	16	17	....	4	3	4	..	4	3	1	4	3	5	..	2
15. Tuberculous meningitis	4	....	1	1	..	..	2	..	..	..	..	..	..	..	..	..	..	2	2	....	4	....	....	4	....	....	1	..	..	1	..	..	..	..	1	..	1	..
16. Abdominal tuberculosis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
19. White swelling	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
21. General tuberculosis	20	1	..	..	..	..	1	..	3	4	3	2	2	2	1	..	1	11	9	....	18	2	....	9	11	....	2	..	..	5	4	1	3	..	1	3	..	1
25. Cancer of stomach and liver	8	....	..	..	..	..	..	1	..	..	..	..	1	2	4	..	..	6	2	..	5	3	....	2	6	....	..	..	..	1	1	..	1	..	1	1	1	2
30. Cancer of other unspecified organs	18	1	..	..	..	..	..	..	..	1	1	3	4	5	2	1	..	6	12	....	16	2	....	3	15	....	1	2	2	2	1	1	..	2	3	..	2	2
31. Tumors	4	....	..	..	..	..	..	..	..	..	..	..	1	2	1	..	..	1	3	....	1	3	....	....	4	....	..	..	..	2	..	..	..	..	..	1	1	..
32. Rheumatism	5	....	..	..	..	..	1	..	..	..	..	..	1	..	2	1	..	4	1	....	3	2	....	2	3	....	1	..	..	1	2	1	..	..	..	..	..	..
33. Diabetes	6	....	..	..	..	..	..	1	1	..	1	..	..	2	..	1	..	2	4	....	4	2	....	2	4	....	1	..	..	1	..	3	..	..	..	..	1	..
34. Anæmia, leukæmia	7	....	..	..	..	..	..	..	1	2	..	..	2	..	2	..	..	4	3	....	7	....	....	2	5	....	..	1	..	..	1	..	1	1	..	1	2	..
35. Alcoholism	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	1	....	2	....	....	....	2	....	..	1	..	..	..	..	..	..	..	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	101	21	4	..	1	..	4	2	1	3	1	4	9	11	27	11	2	64	37	....	77	24	....	36	62	3	16	6	11	9	11	2	9	5	8	8	9	7
38. Encephalitis	4	3	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	1	....	4	....	....	4	....	....	..	..	..	1	..	..	1	1	..	..	1	..
39. Meningitis	15	5	2	..	1	..	2	2	1	1	..	..	..	1	..	..	..	8	7	....	15	....	....	13	2	....	2	..	..	2	3	..	2	..	3	1	1	1
42. Apoplexy	30	....	..	..	..	..	1	..	..	..	..	2	5	5	12	4	1	21	9	....	22	8	....	2	28	....	4	2	3	..	5	2	1	..	2	4	4	3
44. Paralysis	30	....	..	..	..	..	..	..	..	1	1	..	2	5	13	7	1	20	10	...	19	11	....	1	27	2	9	1	3	5	3	..	2	..	2	2	2	1
48. Epilepsy	2	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	..	..	..	..	1	..	..	1	..
49. Convulsions	14	11	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	6	8	....	13	1	....	12	1	1	1	3	3	1	..	..	1	2	1	..	..	2
51. Other diseases of nervous system	6	1	1	..	..	..	..	..	..	..	..	1	2	..	1	..	..	4	2	....	2	4	....	2	4	....	..	..	2	..	..	..	2	1	..	1	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	78	5	..	..	..	..	1	1	..	4	2	3	9	17	22	13	1	44	34	....	44	31	....	12	62	4	6	12	5	11	7	8	2	6	7	5	5	4
52. Pericarditis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
53. Endocarditis	3	....	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	2	1	....	2	1	....	1	2	....	..	..	..	..	..	1	..	2	..	..	..	..
54. Heart Disease	67	4	..	..	..	..	1	1	..	3	1	1	7	16	20	12	1	37	30	....	37	30	....	9	51	4	5	12	4	9	5	6	1	6	5	5	5	4
56. Diseases of arteries	3	....	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	2	1	...	2	1	....	1	2	....	..	..	1	1	..	1	..	..	..	..	..	..
60. Other Diseases of circulatory system	4	1	..	..	..	..	..	..	..	1	..	1	..	..	2	..	..	2	2	....	3	1	....	1	3	....	..	..	..	1	2	1	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																					
Group Total	110	27	9	6	1	..	3	..	3	1	8	5	6	14	17	10	..	54	56	....	81	27	2	57	51	2	12	19	17	16	9	10	7	1	3	5	6	5
61. Diseases of larynx	2	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	1	..	..	1	..	..	..	..
63. Acute bronchitis	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	....	....	1	1	....	1	1	....	..	..	..	..	2	..	..	..	..	..	..	..
64. Chronic bronchitis	5	....	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	1	4	....	2	2	1	....	5	....	1	1	..	..	3	..	..	..	..	..	..	..
65. Broncho-pneumonia	10	6	1	1	..	..	..	..	..	..	..	..	..	1	..	1	..	5	5	..	8	2	....	8	2	....	1	5	2	..	..	1	..	..	..	..	1	..
66. Pneumonia	69	17	7	4	1	..	2	..	2	..	3	4	4	10	10	5	..	38	36	....	51	17	1	39	30	....	8	11	14	15	4	4	3	..	1	3	2	4
68. Congestion of lungs	3	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	2	....	3	....	....	2	1	....	..	1	1	..	1	..	..	..	..	..	..	..
70. Asthma and emphysema	7	....	..	..	..	..	..	..	..	..	..	2	..	2	3	..	..	3	4	....	4	3	..	1	5	1	..	1	..	..	1	2	1	..	1	..	..	1
71. Hemorrhage of lungs	5	....	..	..	..	..	..	..	1	..	2	..	1	..	..	1	..	4	1	....	3	2	....	2	3	....	1	..	..	..	..	..	2	..	..	1	1	..
72. Other diseases of respiratory system, (phthisis ex.)	7	....	1	1	..	..	..	..	..	1	1	1	1	..	1	..	..	1	3	....	7	....	....	2	4	1	1	..	..	..	1	..	..	1	1	1	2	..

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KENT.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	41	5	1	1	..	2	3	2	3	6	4	2	2	..	8	2	..	29	12	....	30	9	2	27	12	2	4	..	4	4	4	1	6	5	4	6	..	3
121. Fractures and dislocations	2	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	1	....	2	..	....	....	1	1	..	..	..	..	1	..	..	1	..	..	..	..
122. Burns and scalds	2	....	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1	1	....	1	1	....	1	1	....	..	..	..	1	1	..	..	..	..	..	..	..
123. Physical phenomena	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	1	..	..	..	..	..	..	..	..	..
124. Drowning	9	....	1	..	..	1	2	1	2	..	..	..	..	..	1	1	..	6	3	....	8	..	1	8	1	....	..	..	..	2	1	2	2	1	1	..	..
125. Inhalation of poisonous gases	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	..	..	..	..
126. Other accidental poisonings	8	2	..	..	..	1	1	..	..	..	1	..	..	..	3	..	..	2	6	....	4	4	....	3	5	....	..	..	2	1	..	..	1	..	..	3	..	1
127. Other accidental traumatisms	14	....	..	..	..	1	..	..	2	3	3	2	..	..	3	..	..	14	..	....	10	3	1	10	3	1	2	..	1	2	..	..	2	1	3	2	..	1
128. Injuries at birth	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	3	..	....	3	..	....	2	..	..	..	..	..	..	1	..	..	..	..
129. Homicide	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
XIV. ILL-DEFINED DISEASES.																																						
Group Total	64	9	4	1	..	..	..	..	1	1	2	6	7	15	9	9	..	34	30	....	42	21	1	18	44	2	11	7	5	10	3	5	..	6	7	4	2	4
130. Dropsy	3	....	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	2	1	....	....	3	....	1	2	....	..	1	1	..	..	..	..	..	..	..	..	1
131. Heart failure	37	1	..	1	..	..	..	..	..	1	2	3	5	9	7	8	..	19	18	....	22	14	1	5	30	2	5	3	3	7	3	3	..	3	5	2	2	1
132. Other ill-defined causes	19	6	3	..	..	..	..	.	1	..	..	2	2	4	1	..	..	10	9	....	16	3	....	8	11	....	6	3	1	2	..	1	..	3	1	2	..	..
133. Unknown causes	5	2	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	3	2	....	4	1	....	4	1	....	..	..	..	1	..	1	..	..	1	..	..	2
134. XV. STILL BIRTHS.																																						
Group Total	37	37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	17	....	37	....	...	37	....	....	4	2	2	6	..	..	3	4	2	5	4	5

CAUSES OF DEATHS BY COUNTIES—LAMBTON—(including Municipalities of all classes), 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																																
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1. GENERAL DISEASES (*A. Epidemic Diseases.*)																																						
Grand Total	770	100	18	7	6	5	21	17	17	57	33	41	52	85	117	106	8	419	351	....	537	220	13	360	407	3	61	104	71	69	74	48	48	47	77	46	69	56
Group Total	47	4	3	3	1	1	7	3	4	5	3	..	4	2	3	4	..	25	22	....	32	15	....	36	11	...	3	2	4	3	5	4	5	2	5	6	5	3
1. Typhoid Fever	18	....	1	..	..	..	2	..	3	5	3	..	4	..	..	..	..	14	4	....	12	6	....	14	4	...	1	..	2	2	1	1	3	1	3	3	1	..
4. Measles	3	....	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	2	....	2	1	....	3	....	....	1	..	..	1	..	1	..	..	..	..	..	..

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LAMBTON—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
IV. DISEASES OE RESPIRATORY SYSTEM.																																						
Group Total	96	15	5	2	..	1	2	1	4	8	2	5	7	12	18	14	..	49	47	....	67	28	1	43	52	1	14	29	7	13	12	4	2	2	4	1	3	5
63. Acute bronchitis	11	3	2	1	..	..	1	..	..	..	..	..	..	..	4	..	..	4	7	....	8	2	1	8	3	..	..	4	2	..	3	1	1	..	..	..	..	..
64. Chronic bronchitis	4	..	..	..	..	..	..	..	..	..	..	..	..	1	..	3	..	2	2	....	1	3	....	1	3	..	..	1	..	..	1	..	..	..	1	..	..	1
65. Broncho-pneumonia	7	4	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	6	1	....	5	2	..	5	2	..	1	4	..	1	..	..	..	..	..	..	1	..
66. Pneumonia	61	7	2	1	..	..	1	1	3	7	2	5	4	9	12	10	..	31	33	....	44	20	....	25	38	1	12	18	4	11	7	1	1	1	3	1	2	3
67. Pleurisy	4	..	..	..	..	..	..	..	1	..	..	..	2	..	1	..	..	2	2	....	3	1	....	1	3	..	..	1	..	..	..	2	..	..	..	..	..	..
70. Asthma and emphysema	3	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	2	1	....	3	..	....	1	2	..	..	..	1	..	1	..	1	..	1	..	..	..
72. Other diseases of respiratory system (phthisis ex.)	3	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	2	1	..	3	..	....	2	1	..	1	1	..	1	..	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	56	29	6	1	..	..	1	2	..	1	2	4	1	2	3	4	..	33	23	....	44	12	....	42	14	..	3	4	5	2	5	2	4	6	14	5	4	2
77. Gastritis	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	....	1	1	....	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..
78. Other diseases of the stomach	10	7	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	6	4	....	8	2	....	8	2	..	1	..	2	..	2	..	1	2	..	2	..	..
80. Diarrhœa and enteritis (under 2 years)	21	18	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	6	....	20	1	....	21	..	..	1	1	..	1	1	1	..	1	13	2	..	..
81. Diarrhœa and enteritis (2 years and over)	6	..	..	1	..	..	..	..	..	2	..	..	1	1	1	..	..	3	3	....	3	3	....	2	4	..	1	..	..	..	2	..	1	1	..	..	1	..
82. Hernia	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	..	1	....	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..
83. Obstruction of intestines	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..
84. Other diseases of intestines	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	2	....	1	1	....	1	1	..	..	..	..	..	..	1	..	..	1	..	..	..
87. Cirrhosis of liver	2	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	2	..	....	..	2	....	..	2	..	..	1	..	..	..	..	1	..	..	..	..	..
89. Other diseases of liver	5	1	2	..	..	..	1	..	..	..	..	1	..	..	..	..	..	2	3	....	5	..	....	4	1	..	..	1	1	..	..	..	..	..	..	..	1	1
91. Peritonitis, non-puerperal	5	1	..	..	..	..	..	1	..	1	..	1	..	..	..	1	..	1	4	....	4	1	....	2	3	..	..	1	..	..	..	..	..	1	..	1	1	1
92. Appendicitis	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	....	1	..	....	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	51	3	2	.	1	..	1	..	..	2	4	1	6	12	9	8	2	36	15	....	27	23	1	12	39	..	3	6	3	2	6	2	3	1	11	7	4	3
94. Acute nephritis	4	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	2	2	....	2	1	1	1	3	..	..	1	..	..	1	..	..	..	1	..	1	..
95. Bright's disease	36	2	2	..	..	..	..	..	..	2	4	..	5	10	6	4	1	25	11	....	22	14	....	8	28	..	1	5	3	2	4	2	2	1	6	6	2	2
96. Other diseases of kidneys	2	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	..	....	..	2	....	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..
98. Diseases of bladder	2	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	..	....	1	1	....	..	2	..	..	..	..	..	..	..	1	..	1	..	..	..
101. Other diseases of uterus	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	1	..	....	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..
105. Other diseases of genito-urinary system	6	..	..	1	..	1	..	..	..	..	..	..	..	..	1	3	..	5	1	....	1	5	....	2	4	..	2	..	..	..	1	..	..	..	2	1	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	5	..	..	..	..	..	..	..	..	4	1	..	..	..	..	..	..	..	5	....	5	..	...	..	5	..	..	..	..	..	4	..	..	..	..	1	..	..
106. Puerperal septicæmia	2	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	2	....	2	..	....	..	2	..	..	..	..	..	2	..	..	..	..	..	..	..
108. Other causes incident to childbirth	3	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	3	....	3	..	....	..	3	..	..	..	..	..	2	..	..	..	..	1	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	8	1	..	..	..	..	..	1	..	1	1	..	..	..	2	2	..	6	2	....	6	2	....	2	6	..	..	..	..	1	1	1	1	2	1	1	..	..
109. Gangrene	5	..	..	..	..	..	..	1	..	..	..	..	..	..	2	2	..	5	..	....	3	2	..	1	4	..	..	..	..	1	1	1	1	..	..	..	..	..
111. Abscess	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	1	..	....	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..
112. Other diseases of skin	2	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	....	2	..	....	1	1	..	..	..	..	..	..	..	..	..	1	1	..	..
XI. EARLY INFANCY.																																						
Group Total	47	47	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	27	20	....	47	..	....	47	..	..	1	2	3	3	1	8	3	9	3	2	7	5
117. Premature birth	24	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	12	....	24	..	....	24	..	..	1	1	..	1	..	6	1	7	1	1	4	1
118. Congenital debility	23	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	8	....	23	..	....	23	..	..	..	1	3	2	1	2	2	2	2	1	**3**	4

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LANARK.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	83	1	..	1	..	1	..	1	2	15	16	10	11	14	7	3	1	35	48	....	73	9	1	29	54	....	7	5	4	9	6	10	5	5	6	11	10	5
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
13. Tuberculosis of lungs	14	....	..	1	..	..	..	..	1	4	4	2	..	2	..	..	..	6	8	....	12	2	....	8	6	....	..	..	2	2	..	5	1	..	..	3	1
14. Tuberculosis of larynx	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..
21. General Tuberculosis	24	....	..	..	..	1	..	1	..	7	9	3	2	1	..	..	..	7	17	....	24	....	....	8	16	....	3	1	..	5	1	4	2	1	2	3	..	2
25. Cancer of stomach and liver	5	....	..	..	..	..	..	..	..	..	1	1	1	2	1	..	..	4	1	....	4	....	1	....	5	....	..	1	..	1	1	1	..	1	..	..	..	..
26. Cancer of intestines	3	....	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	3	....	....	3	....	....	2	1	....	..	..	..	..	..	..	..	..	..	..	2	1
27. Cancer of genital organs	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
30. Cancer of other unspecified organs	8	....	..	..	..	..	..	..	1	..	1	1	2	3	..	..	..	4	4	....	....	4	4	1	7	....	1	..	..	..	1	..	1	1	3	1	..
31. Tumors	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
32. Rheumatism	3	....	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	2	1	....	2	1	....	....	3	....	..	..	..	1	..	..	1	1	..	..	..	..
33. Diabetes	6	....	..	..	..	..	..	..	1	..	..	..	1	3	1	..	..	3	3	....	6	....	....	2	4	....	..	1	..	..	..	..	..	..	1	..	4	..
34. Anæmia, leukæmia	12	....	..	..	..	..	..	..	..	3	1	2	3	1	1	..	1	5	7	....	11	1	....	3	9	....	1	2	1	..	1	..	..	1	1	4	..	1
37. Other General diseases	3	....	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	....	3	....	3	....	....	3	....	....	..	..	..	..	2	..	1	..	..	..	..	..
II.—DISEASES OF NERVOUS SYSTEM.																																						
Group Total	60	12	3	1	1	..	2	1	2	2	..	1	3	12	16	4	..	30	30	....	53	6	1	27	33	....	2	3	10	4	4	5	4	9	3	7	2	7
38. Encephalitis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	1	1	....	2	....	....	1	..	..	..	..	..	..	..	..	1	..	..
39. Meningitis	8	1	2	..	..	..	1	1	1	2	..	..	..	..	..	..	..	4	4	....	7	1	....	8	....	....	..	..	..	..	..	2	1	2	1	1	..	1
42. Apoplexy	16	....	..	..	..	..	..	..	..	..	..	..	1	7	7	1	..	11	5	....	13	3	....	2	14	....	1	..	2	..	2	2	1	1	1	2	..	4
43. Softening of Brain	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
44. Paralysis	20	1	..	..	..	..	..	..	..	..	..	1	2	4	9	3	..	10	10	....	18	1	1	2	18	....	..	1	7	2	1	..	1	3	1	1	2
49. Convulsions	11	8	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	3	8	....	11	....	....	11	....	....	..	2	1	2	1	1	1	1	..	2	..	..
51. Other diseases of nervous system	2	....	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	2	....	....	2	....	....	1	1	....	..	..	..	..	..	..	..	2	..	..	..	..
III.—DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	29	4	..	..	..	..	..	..	1	..	2	2	2	5	8	5	..	16	13	...	23	6	....	7	22	....	3	3	2	2	4	..	2	1	3	1	5	3
54. Heart disease	28	3	..	..	..	..	..	..	1	..	2	2	2	5	8	5	..	15	13	....	22	6	....	6	22	....	2	3	2	2	4	..	2	1	3	1	5	3
60. Other diseases of circulatory system	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
IV.—DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	63	6	5	1	..	..	..	..	..	4	6	5	6	12	6	11	1	31	32	....	44	18	1	16	47	....	5	10	1	9	7	1	1	..	1	6	3	9
63. Acute bronchitis	7	1	1	1	..	..	..	..	..	..	..	..	..	1	..	3	..	3	4	....	5	2	....	3	4	....	..	..	1	2	1	..	1	..	..	2	..	..
64. Chronic bronchitis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
65. Broncho-pneumonia	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....	3	....	1	2	....	3	....	....	..	2	1	..	..	..	..	..	..	..	..	..
66. Pneumonia	46	4	4	..	..	..	..	..	..	4	5	4	5	11	4	4	1	24	22	....	31	11	1	9	37	....	4	6	8	7	5	1	..	..	1	3	3	8
67. Pleurisy	3	....	..	..	..	..	..	..	..	..	1	1	..	..	1	..	..	1	2	....	2	1	....	....	3	....	1	1	..	..	..	..	..	..	..	1	..	..
70. Asthma and emphysema	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
72. Other diseases of respiratory system, phthisis ex	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	1	....	1	1	....	1	1	....	..	1	..	..	..	..	..	..	..	..	..	1

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LANARK.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	46	9	..	1	..	..	..	..	..	3	2	..	1	11	13	6	..	22	24	....	36	10	...	16	29	1	..	4	4	3	6	2	6	3	5	6	2	5
130. Dropsy	11	....	..	..	..	..	..	..	..	..	..	..	..	6	4	1	..	4	7	....	5	6	....	1	10	....	..	..	2	1	1	1	2	1	..	1	..	2
131. Heart failure	26	2	..	..	..	..	..	..	..	3	2	..	1	5	8	5	..	13	13	....	23	3	....	7	18	1	..	3	1	2	3	1	3	1	2	5	2	3
132. Other ill-defined causes	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	....	5	....	....	5	....	....	..	..	..	..	1	..	..	1	3	..	..	..
133. Unknown causes	4	2	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	3	1	....	3	1	....	3	1	....	..	1	1	..	1	..	1	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	30	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	15	2	30	....	....	30	....	....	3	4	2	2	2	1	4	1	6	3	..	2

CAUSES OF DEATHS BY COUNTIES—LEEDS AND GRENVILLE (including Municipalities of all classes), 1907.

Causes of Death.	Total.	Ages. Under 5. 0.1.	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	877	147	9	10	4	2	11	7	24	53	57	73	76	109	145	140	10	459	418	....	694	179	9	339	504	34	81	75	83	87	86	62	63	70	66	78	54	73
Group Total	26	4	..	1	1	.	2	1	2	1	3	2	1	1	4	3	..	13	13	....	23	3	....	13	12	1	4	6	2	4	3	..	..	2	..	2	1	1
1. Typhoid Fever	10	....	..	..	..	..	..	..	2	1	2	2	..	1	2	....	..	5	5	....	9	1	....	3	7	....	..	2	2	2	..	..	..	2	..	2	1	..
3. Smallpox	1	....	..	..	..	..	..	1	..	..	..	..	..	....	....	....	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
5. Scarlet Fever	1	....	..	1	..	..	..	..	..	..	..	..	..	....	....	....	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
6. Whooping Cough	1	1	..	..	..	..	..	..	..	..	..	..	..	....	....	....	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..

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LEEDS AND GRENVILLE.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	105	20	2	2	..	..	..	..	1	1	7	9	14	10	26	12	1	53	52	....	80	23	2	31	67	4	17	12	8	19	15	6	1	5	5	3	6	8
61. Diseases of larynx	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..
62. Diseases of the thyroid body	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..
63. Acute bronchitis	10	4	1	..	..	..	..	..	..	..	..	..	1	..	3	1	..	3	7	..	8	2	..	5	5	..	1	2	1	2	..	..	..	..	1	..	1	2
64. Chronic bronchitis	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
65. Broncho-pneumonia	6	4	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	4	2	..	6	..	..	4	2	..	3	1	..	2	..	..	..	..	..	..	..	..
66. Pneumonia	69	11	1	2	..	..	..	..	..	1	3	8	9	8	17	8	1	32	37	....	53	14	2	22	44	3	12	9	5	10	11	5	1	2	3	1	4	6
67. Pleurisy	3	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	..	3	..	..	3	..	..	..	1	1	..	..	1	1	..	..	..	..	..	..	..	..
68. Congestion of lungs	2	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	1	..	..	2	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..
69. Gangrene of lungs	2	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	1	..	2	..	..	1	1	..	..	..	..	1	..	..	..	1	..	..	..	..
70. Asthma and emphysema	8	..	..	..	..	..	..	..	..	..	..	..	1	2	4	1	..	6	2	..	4	4	..	1	7	..	..	..	..	3	3	..	..	1	..	..	1	..
71. Hemorrage of Lungs	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..
72. Other diseases of respiratory system, phthisis excepted	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	63	18	4	..	2	..	1	2	..	5	3	4	5	5	7	5	2	27	36	....	53	9	1	37	25	1	3	3	5	4	4	5	6	6	14	9	3	1
76. Ulcer of stomach	4	..	..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	1	3	..	4	..	..	3	1	..	..	..	..	1	..	..	..	..	..	2	1	..
77. Gastritis	3	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	2	1	..	3	..	..	..	3	..	..	1	1	..	1	..	..	..	..	..	..	..
78. Other diseases of the stomach	23	7	..	..	..	1	1	..	1	1	1	2	1	5	2	1	..	10	13	..	19	3	1	12	11	..	1	..	2	1	2	3	5	1	2	4	1	1
80. Diarrhœa and enteritis (under 2 years)	13	10	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	5	..	12	1	..	13	..	..	1	..	1	..	1	..	..	3	6	1	..	..
81. Diarrhœa and enteritis (2 years and over)	4	..	..	..	2	..	..	..	..	1	..	..	..	..	..	1	..	1	3	..	3	1	..	2	1	1	..	..	..	..	..	1	..	..	1	1	1	..
82. Hernia	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..
83. Obstruction of intestines	4	1	..	..	..	..	..	..	..	..	..	1	1	..	1	..	..	1	3	..	3	1	..	1	3	..	..	1	1	..	..	..	..	..	1	1	..	..
84. Other diseases of intestines	2	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	1	1	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..
87. Cirrhosis of liver	3	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	..	3	..	2	1	..	..	3	..	..	..	..	1	..	..	..	..	..	1	..	..
88. Biliary calculi	2	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	1	..	2	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
89. Other diseases of liver	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..
91. Peritonitis, non-puerperal	2	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	2	..	..	1	1	..	2	..	..	..	..	..	..	..	..	..	1	..	1	..	..
92. Appendicitis	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	46	1	..	..	..	..	1	3	..	1	..	3	7	10	13	7	..	29	17	....	28	18	....	11	28	7	4	5	8	5	1	3	..	2	4	6	6	2
94. Acute nephritis	10	..	..	..	..	..	..	1	..	1	..	1	3	1	2	1	..	8	2	..	6	4	..	3	5	2	1	..	2	1	..	..	..	1	..	1	3	1
95. Bright's diseases	21	..	..	..	..	..	1	1	..	..	..	1	3	5	7	3	..	10	11	..	11	10	..	4	15	2	2	2	5	2	1	..	..	..	2	5	1	1
96. Other diseases of kidneys	5	1	..	..	..	..	..	1	..	..	..	..	..	1	..	2	..	4	1	..	5	..	..	2	3	..	..	1	..	..	..	1	..	1	2	..	..	..
97. Calculi of urinary tract	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..
98. Diseases of bladder	6	..	..	..	..	..	..	..	..	..	..	..	1	1	3	1	..	5	1	..	3	3	..	2	4	..	..	2	..	2	..	..	..	..	..	..	2	..
101. Other diseases of uterus	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..
105. Other diseases of the genito-urinary system	2	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2	..	..	1	1	..	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..

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CAUSES OF DEATHS BY COUNTIES—LENNOX AND ADDINGTON (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	308	43	7	1	2	..	6	3	7	20	13	15	29	39	62	59	2	159	149	....	249	55	4	103	195	10	40	28	33	21	24	23	18	18	25	23	37	18
Group Total	16	2	..	..	1	..	..	..	..	2	1	1	1	..	3	5	..	6	10	....	12	4	....	7	8	1	4	3	2	..	2	..	..	..	2	3	..	..
1. Typhoid Fever	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	2	..	..
4. Measles	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
7. Diphtheria and Croup	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	....	2	....	....	2	....	....	2	....	..	..	..	..	..	..	..	..	..	2	..	..
8. Influenza	10	2	..	..	1	..	..	..	..	..	..	..	..	..	3	4	..	4	6	....	8	2	....	4	5	1	3	3	2	..	2	..	..	..	..	..	..	..
9. Dysentery	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
(*B. Other General Diseases.*)																																					
Group Total	50	1	..	..	..	..	1	..	2	4	6	3	8	9	10	5	1	22	28	....	46	4	....	12	37	1	6	2	2	2	4	4	2	2	5	9	7	5
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
13. Tuberculosis of lungs	16	....	..	..	..	..	..	..	1	2	4	2	2	2	1	1	1	7	9	....	14	2	....	5	10	1	1	1	..	1	1	3	..	1	1	2	3	..	3
20. Tuberculosis of other organs	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
21. General Tuberculosis	7	....	..	..	..	..	..	..	1	2	2	1	..	..	1	..	..	1	6	....	7	....	....	2	5	....	1	1	1	..	..	..	..	..	1	2	1	..
25. Cancer of the stomach and liver	5	....	..	..	..	..	..	..	..	..	..	..	..	1	4	..	..	4	1	....	5	....	....	....	5	....	1	..	1	..	..	..	1	..	..	1	..	1
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
29. Cancer of skin	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2	....	....	2	....	....	1	1	....	..	..	..	..	..	..	..	..	..	..	1	1
30. Cancer of other unspecified organs	12	....	..	..	..	..	..	..	..	..	..	..	4	4	1	3	..	4	8	....	10	2	....	1	11	....	2	..	..	1	1	1	..	1	2	2	2	..
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
33. Diabetes	3	....	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	3	....	....	3	....	....	1	2	....	..	..	..	..	1	..	..	..	..	..	2	..
34. Anæmia, leukæmia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	42	7	2	..	..	..	2	1	..	2	..	1	5	9	9	4	..	23	19	....	39	3	....	16	26	....	6	3	6	1	5	3	1	4	1	3	7	2
38. Encephalitis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
39. Meningitis	3	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	1	....	3	....	....	2	1	....	1	..	..	..	..	..	1	..	1	..	..	..
41. Other diseases of spinal cord	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	..	..	..	..	..	1	1	..
42. Apoplexy	13	1	..	..	..	..	..	..	..	2	..	1	1	2	3	3	..	8	5	....	12	1	....	3	10	....	..	2	3	..	2	2	1	2	1	..	..	..
44. Paralysis	13	....	..	..	..	..	1	..	..	..	..	..	..	5	6	1	..	5	8	....	11	2	....	2	11	....	1	1	2	..	2	..	..	..	..	1	4	2
47. Other diseases of brain	2	....	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	1	1	....	2	....	....	1	1	....	1	..	..	..	..	..	..	..	..	..	1	..
49. Convulsions	8	4	1	..	..	..	..	1	..	..	..	..	2	..	..	..	..	5	3	....	8	....	....	7	1	....	2	..	1	1	1	..	..	1	..	1	1	..

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LENNOX AND ADDINGTON—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
X. MALFORMATIONS.																																						
Group Total	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..
116. Congenital malformations (still-births excluded)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..
XI. EARLY INFANCY.																																						
Group Total	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	2	....	13	....	...	13	....	....	1	1	..	2	2	..	1	1	1	2	1
117. Premature birth	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	....	4	....	....	4	....	....	..	..	..	..	..	..	..	1	..	1	2	..
118. Congenital debility	9	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	1	....	9	....	....	9	....	....	1	1	..	2	2	..	1	..	1	..	..	1
XII. OLD AGE.																																						
Group Total	42	....	..	..	..	..	..	..	..	..	..	..	..	..	11	31	..	17	25	....	18	24	....	4	35	3	4	3	4	2	2	3	3	2	7	2	8	2
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	14	....	1	..	..	..	..	..	3	4	2	..	1	2	1	..	..	12	2	....	12	1	1	9	4	1	1	4	1	1	1	..	3	2	1	..	..	..
120. Suicides	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	....	1	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
122. Burns and scalds	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
124. Drowning	3	....	..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	3	....	....	2	1	....	2	1	....	..	..	..	..	..	1	2	..	..	..	..	..
127. Other accidental traumatisms	9	....	..	..	..	..	..	2	4	1	..	..	1	1	..	..	..	8	1	....	9	....	....	6	2	1	1	4	..	1	..	..	2	..	1	..	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	29	1	..	..	..	..	1	1	..	..	..	1	7	4	10	3	1	17	12	....	22	6	1	6	21	2	5	2	3	3	..	..	4	1	3	4	2	2
130. Dropsy	6	....	..	..	..	..	..	..	..	..	..	1	3	1	1	..	..	4	2	....	6	....	....	....	6	..	..	..	2	..	..	..	1	..	1	1	1	..
131. Heart failure	17	....	..	..	..	..	..	..	..	..	..	..	3	3	7	3	1	11	6	....	11	5	1	3	13	1	2	1	1	2	..	..	3	1	2	3	1	1
132. Other ill-defined causes	5	1	..	..	..	..	..	1	..	..	..	..	1	..	2	..	..	2	3	....	4	1	....	2	2	1	3	1	..	..	..	..	..	..	..	..	..	1
133. Unknown causes	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
XV. STILL BIRTHS.																																						
Group Total	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	....	6	....	....	6	....	....	2	..	1	..	1	..	..	..	..	1	..

CAUSES OF DEATHS BY COUNTIES—LINCOLN (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct	Nov.	Dec.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	450	106	12	5	3	..	9	7	9	24	29	17	32	54	61	82	..	233	217	..	347	99	4	202	241	7	52	38	52	40	33	31	31	30	42	24	37	40
Group Total	19	....	1	2	1	..	1	3	..	2	1	..	2	3	..	3	..	8	11	....	17	2	..	10	9	...	1	3	7	2	1	..	1	..	1	2	..	1
1. Typhoid Fever	6	....	..	..	..	..	..	2	..	2	1	..	1	..	..	..	..	1	5	....	5	1	....	4	2	....	1	..	..	1	..	..	1	..	1	..	..	1
4. Measles	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	1	1	..	..
7. Diphtheria and Croup	5	....	1	1	1	..	..	..	..	..	..	..	..	1	..	1	..	3	2	....	5	....	....	5	....	....	..	1	1	1	1	..	..	..	..	1	..	..
8. Influenza	7	....	..	..	..	..	1	1	..	..	..	..	1	2	..	2	..	4	3	..	6	1	....	....	7	....	..	2	5	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	57	3	..	1	1	..	2	1	1	8	13	4	1	9	8	5	..	27	30	....	44	13	..	15	42	....	5	5	1	4	6	7	6	5	5	2	2	6
12. Septicæmia	3	...	..	..	..	..	1	..	..	1	..	..	..	..	..	1	..	1	2	....	3	....	....	1	2	....	..	1	..	..	..	1	..	..	..	1	..	..
13. Tuberculosis of lungs	15	....	..	..	1	..	..	1	..	3	6	1	..	2	1	..	..	12	3	....	12	3	....	3	12	....	1	..	1	..	1	2	2	..	2	..	..	4
15. Tuberculous meningitis	4	2	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	2	2	....	4	....	....	3	1	....	..	..	..	..	1	..	..	2	..	..	1	..
21. General tuberculosis	7	....	..	..	..	..	..	..	1	3	2	..	..	1	..	..	..	4	3	....	7	....	....	2	5	....	1	1	1	1	..	1	1	..	..	..	..	1
25. Cancer of stomach and liver	4	....	..	..	..	..	..	..	..	1	..	..	1	1	1	..	..	3	1	....	3	1	....	....	4	....	..	..	..	1	..	1	1	..	1	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	10	....	..	..	..	..	..	..	..	..	1	2	..	2	4	1	..	3	7	....	4	6	....	....	10	....	1	2	..	2	1	1	..	1	1	1	..	..
31. Tumors	3	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	2	....	3	....	....	1	2	....	..	..	1	1	..	..	..	..	..	..	..	..
33. Diabetes	3	....	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	3	....	....	3	....	....	1	2	....	1	..	1	..	1	..	..	..	..	..	..	..
34. Anæmia, leukæmia	5	....	..	..	..	..	..	..	..	1	1	1	..	1	1	..	..	1	4	....	4	1	....	4	1	....	1	..	..	..	..	1	1	..	..	1	1	..
35. Alcoholism	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	53	9	5	1	..	..	1	..	1	1	2	7	12	9	5	..	..	26	27	....	42	11	....	20	33	....	6	2	1	4	8	5	5	3	3	2	1	7
39. Meningitis	10	4	4	..	..	..	..	..	..	1	1	..	..	..	..	..	..	9	1	....	10	....	....	8	2	....	1	..	..	..	2	1	2	1	..	1	1	1
42. Apoplexy	16	1	..	..	..	..	..	..	..	..	..	..	3	6	2	2	..	6	10	....	8	8	....	2	14	....	3	1	1	..	2	..	1	2	1	..	..	2
44. Paralysis	18	....	1	..	..	..	..	..	..	..	1	2	5	7	2	..	..	10	8	....	15	3	....	4	14	....	2	1	..	2	3	3	2	..	1	..	2	2
46. Other forms of mental disease	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
47. Other diseases of brain	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
49. Convulsions	6	4	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	5	....	6	....	....	6	....	....	..	..	..	..	2	1	..	..	1	..	2	..
51. Other diseases of the nervous system	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..

LINCOLN.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	42	3	..	..	..	..	2	..	3	..	5	1	9	9	7	3	..	22	20	....	31	11	....	15	25	2	6	1	3	5	3	3	2	3	3	6	3	4
52. Pericarditis	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
53. Endocarditis	3	....	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	1	2	....	3	....	....	....	3	....	..	..	..	1	1	..	1	..	..	..	..	..
54. Heart Disease	31	2	..	..	..	..	2	..	2	..	4	..	4	8	6	3	..	17	14	....	23	8	....	12	19	....	6	1	2	4	..	2	1	1	2	6	2	4
55. Angina pectoris	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	....	....	1	1	....	....	1	1	..	..	..	..	1	..	..	1	..	..	..	..
56. Diseases of arteries	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	1	....	1	1	....	....	1	1	..	..	1	..	..	..	..	..	1	..	..	..
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
60. Other diseases of circulatory system	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	1	..	1	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	61	17	4	1	..	..	..	..	..	3	1	4	5	8	10	11	..	34	30	....	52	12	....	32	31	1	12	13	14	4	3	1	..	1	..	2	7	4
63. Acute bronchitis	10	5	..	..	..	..	..	..	..	..	..	..	1	..	3	1	..	6	4	....	9	1	....	5	5	....	2	2	3	1	..	..	..	..	..	1	1
65. Broncho-pneumonia	4	....	1	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3	1	....	2	2	....	1	3	....	..	2	2	..	..	..	..	..	..	..	..	..
66. Pneumonia	43	12	3	1	..	..	..	..	..	1	1	3	3	7	6	6	..	21	22	....	35	8	....	24	18	1	9	9	8	2	1	4	..	1	..	1	5	3
68. Congestion of lungs	4	....	..	..	..	..	..	..	..	..	..	1	1	1	..	1	..	2	2	....	4	....	....	....	4	....	..	..	..	1	1	..	..	..	..	1	1	..
70. Asthma and emphysema	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
71. Hemorrhage of the lungs	2	....	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	1	..	..	..	1	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	49	21	1	..	..	..	1	2	2	4	3	..	3	2	4	6	.	26	23	....	36	13	....	33	16	....	6	2	2	2	..	6	..	12	9	2	3	5
76. Ulcer of stomach	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
77. Gastritis	4	....	..	..	..	..	..	..	..	..	1	..	..	..	..	3	..	3	1	....	3	1	....	2	2	....	..	1	..	..	..	1	..	..	1	..	1	..
78. Other Diseases of the Stomach	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	2	....	3	1	....	2	2	....	2	..	1	..	..	..	..	..	1	..	..	..
80. Diarrhœa and enteritis (under 2 years)	18	17	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	10	....	16	2	....	18	....	....	1	..	..	1	..	1	..	8	4	1	1	1
81. Diarrhœa and enteritis (2 years and over)	3	....	..	..	..	..	..	..	..	1	1	..	..	..	1	..	..	1	2	....	2	1	...	....	3	...	..	..	..	..	..	..	..	1	2	..	..	..
82. Hernia	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
83. Obstruction of intestines	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	....	....	....	2	....	1	1	....	..	..	..	..	..	..	..	1	..	..	..	1
87. Cirrhosis of liver	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
89. Other diseases of liver	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	3	....	....	2	1	....	....	3	....	..	1	..	1	..	..	..	..	..	..	..	1
91. Peritonitis (not puerperal)	7	1	..	..	..	..	..	..	1	2	1	..	1	..	..	1	..	1	6	....	4	3	....	4	3	....	2	..	1	..	..	1	..	..	1	1	1
92. Appendicitis	5	....	..	..	..	..	1	2	1	1	..	..	..	..	..	..	..	3	2	....	4	1	....	5	....	....	1	..	..	..	..	..	..	2	1	..	1	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	15	....	..	..	1	..	..	..	..	4	1	2	..	4	2	1	..	10	5	....	11	3	1	6	9	....	2	1	2	2	2	..	1	..	2	1	1	1
94. Acute nephritis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
95. Bright's disease	12	....	..	..	1	..	..	..	..	3	1	1	..	4	1	1	..	10	2	....	9	3	....	5	7	....	2	1	1	2	2	..	1	..	1	1	1	..
96. Other diseases of kidneys	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
102. Ovarian tumor	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	....	1	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..

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CAUSES OF DEATHS BY COUNTIES—MIDDLESEX (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																						
(A. *Epidemic Diseases*).																																						
Grand Total	1,365	238	32	12	4	11	16	9	31	97	90	91	130	169	213	199	23	725	637	3	892	469	4	563	789	13	115	130	155	128	129	87	121	97	91	118	82	112
Group Total	36	10	3	..	1	1	2	1	2	3	2	1	4	4	..	2	..	17	19	...	26	10	....	24	12	....	5	5	7	5	2	3	3	1	4	1	..	.
1. Typhoid Fever	5	....	..	..	..	..	..	..	1	2	1	..	1	..	..	..	..	3	2	....	3	2	....	3	2	...	2	1	..	..	..	..	..	..	1	1	..	..
4. Measles	5	4	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	4	....	5	....	....	5	....	....	1	3	..	1	..	..	..	..	..	..	..	..
5. Scarlet Fever	2	....	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	1	..	..	..	1	..	..	..	..	..
6. Whooping Cough	5	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	1	....	2	1	....	..	..	..	1	1	2	1	..	..	..	..	..
7. Diphtheria and Croup	3	....	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	2	1	....	3	1	....	3	....	....	1	..	..	..	..	1	..	1	..	..	..	..
8. Influenza	8	1	1	..	..	..	..	..	..	..	..	2	2	..	..	2	..	3	5	...	5	3	....	3	5	....	1	1	4	..	..	..	..	..	..	..	..	..
9. Dysentery	3	....	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	....	3	....	1	2	....	1	2	....	..	..	..	1	..	..	..	1	1	..	..	..
10. Erysipelas	5	2	..	..	..	..	..	..	..	1	..	..	1	1	..	..	..	4	1	....	3	2	...	2	3	....	..	..	2	..	1	1	..	..	1	..	..	..
(*B. Other General Diseases*).																																						
Group Total	213	4	1	1	..	2	..	2	10	37	28	25	39	32	21	11	..	102	111	...	159	53	1	71	141	1	17	17	28	28	22	15	21	10	15	13	8	16
12. Septicæmia	14	1	..	..	..	..	..	..	..	3	2	1	3	2	1	1	..	11	3	....	10	4	....	3	11	....	4	..	2	2	2	1	..	1	2	..	..	..
13. Tuberculosis of lungs	56	....	..	..	..	1	..	..	7	16	10	8	3	7	3	1	..	21	35	....	48	8	....	26	30	....	4	6	9	8	8	6	5	3	3	1	..	3
15. Tuberculous meningitis	3	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	1	....	2	1	....	3	....	....	..	2	..	..	1	..	..	..	..	..	..	..
21. General tuberculosis	44	1	..	1	..	..	..	2	10	9	9	6	5	1	..	..	..	17	27	....	39	5	....	20	24	....	5	3	7	7	2	3	6	1	3	1	..	6
25. Cancer of stomach and liver	13	....	..	..	..	..	..	..	..	..	1	1	4	4	2	1	..	8	5	....	9	4	....	2	11	....	..	..	3	2	1	..	4	..	..	2	1	..
26. Cancer of intestines	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
29. Cancer of skin	2	....	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	....	2	....	1	1	....	....	2	....	..	..	..	..	1	..	..	..	1	..	..	..
30. Cancer of other unspecified organs	37	....	..	..	..	..	..	..	..	2	2	2	12	7	8	4	..	22	15	....	21	15	1	5	31	1	1	3	3	5	3	2	4	3	2	5	3	3
31. Tumors	4	....	..	..	..	..	..	..	..	..	2	..	1	..	..	1	..	1	3	....	4	....	....	....	4	....	..	1	..	..	..	1	..	..	..	2	..	..
32. Rheumatism	7	....	..	..	..	..	..	..	..	1	1	2	1	2	..	..	..	4	3	....	6	1	....	2	5	....	..	..	1	2	..	..	1	..	..	..	2	1
33. Diabetes	9	....	..	..	..	..	1	..	..	2	..	..	1	1	2	2	..	5	4	....	3	6	....	5	4	....	..	..	1	..	2	..	1	..	3	..	1	1
34. Anæmia, leukæmia	17	....	..	..	..	..	..	..	1	3	1	1	4	3	3	1	..	8	9	....	12	5	....	1	16	....	3	2	1	1	1	2	2	2	1	..	1	1
35. Alcoholism	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
37. Other general diseases	4	1	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	2	2	....	3	1	....	3	1	....	..	..	1	..	1	..	1	..	1	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	185	17	11	7	..	2	1	..	5	11	9	8	22	34	33	22	3	95	90	....	122	62	1	73	109	3	14	14	23	18	16	10	17	22	11	15	10	15
38. Encephalitis	4	2	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	3	1	...	3	1	....	2	2	...	..	..	1	..	2	..	1	..	..	..	..	..

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MIDDLESEX.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	85	2	..	..	..	..	..	1	1	8	8	5	7	13	22	18	..	53	32	....	41	44	....	16	68	1	7	5	10	5	7	8	6	3	6	10	7	11
95. Bright's disease	68	1	..	..	..	..	..	1	1	7	7	5	6	11	17	12	..	40	28	....	32	36	....	12	55	1	5	5	10	5	7	5	4	3	1	5	6	9
96. Other diseases of kidneys	9	1	..	..	..	..	..	..	..	..	1	..	..	1	3	3	..	9	....	....	4	5	....	3	6	....	1	.	..	..	..	1	1	..	2	2	..	2
97. Calculi of urinary tract	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
98. Diseases of bladder	4	....	..	..	..	..	..	..	..	..	..	..	1	..	1	2	..	3	1	....	2	2	....	....	4	....	..	..	..	..	..	1	..	..	..	2	1	..
100. Uterine tumor	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
105. Other diseases of the genito-urinary system	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	1	....	2	....	....	1	1	....	1	..	..	..	..	..	..	..	..	..	..	..
VII.—THE PUERPERAL STATE.																																						
Group Total	6	....	..	..	..	..	..	..	..	3	2	1	..	..	..	..	..	....	6	....	6	....	....	....	6	....	..	1	1	2	..	..	..	..	..	..	1	1
106. Puerperal septicemia	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	....	2		2	....	....	....	2	....	..	..	1	1	..	..	..	..	..	..	..	..
107. Puerperal convulsions	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
108. Other cases incident to childbirth	3	....	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	....	3	....	3	....	....	....	3	....	..	..	..	1	..	..	..	..	..	..	1	1
VIII.—DISEASES OF SKIN.																																						
Group Total	13	1	..	..	..	..	..	..	..	..	1	1	3	1	2	4	..	9	4	....	9	4	....	5	8	....	1	..	2	..	1	1	2	..	..	2	1	3
109. Gangrene	9	....	..	..	..	..	..	..	..	..	..	.	2	1	2	4	..	5	4	....	5	4	....	4	5	....	1	..	2	..	1	1	1	..	..	1	1	1
111. Abscess	3	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	3	....	....	3	....	....	1	2	....	..	..	..	..	..	..	1	..	..	1	..	1
112. Other diseases of skin	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
IX.—DISEASES OF LOCOMOTOR SYSTEM. (No diseases in this class.)																																						
X.—MALFORMATIONS.																																						
Group Total	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	2	..	2	..	1	..	1	1	..	..	..	1
116. Congenital malformations (still-births excluded)	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	2	..	2	..	1	..	1	1	..	..	..	1
XI. EARLY INFANCY.																																						
Group Total	57	57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34	23	....	57	....	....	57	....	....	6	1	3	2	4	6	6	8	5	6	6	4
117. Premature birth	18	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	4	....	18	....	....	18	....	....	1	1	1	1	1	3	2	1	1	4	1
118. Congenital debility	39	39	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	19	....	39	....	..	39	....	....	5	..	2	1	3	5	3	6	4	5	2	3
119. XII. OLD AGE.																																						
Group Total	82	....	..	..	..	..	..	..	..	..	..	..	1	5	16	60	..	49	33	....	25	57	....	11	70	1	6	8	11	8	8	7	6	1	7	6	4	10
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES																																						
Group Total	66	1	..	..	..	1	3	4	1	11	11	12	8	7	5	2	..	51	15	....	46	20	....	30	34	2	2	7	5	3	10	8	10	6	1	4	3	7
120. Suicides	4	....	..	..	..	..	..	..	..	..	..	1	2	1	..	..	..	4	....	....	4	....	....	....	4	....	..	1	1	1	..	..	..	..	..	..	..	1
121. Fractures and dislocations	4	....	..	..	..	..	..	..	..	..	2	1	..	..	1	..	..	4	....	....	3	1	....	2	2	....	..	1	..	..	1	1	..	..	..	..	..	1

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	45	1	..	..	..	..	1	3	1	10	11	8	3	3	4	..	..	25	20	....	36	8	1	20	22	3	8	9	9	3	1	1	2	2	4	3	2	1
12. Septicæmia	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
13. Tuberculosis of lungs	21	....	..	..	..	..	..	..	1	9	5	4	1	..	1	..	..	14	7	....	17	3	1	10	10	1	5	4	3	2	..	1	..	1	2	1	2	..
15. Tuberculous meningitis	2	....	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	2	..	..	..	..	..	..	..	..	..	..
16. Abdominal tuberculosis	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	1	....	1	1	....	2	....	....	1	1	..	..	..	..	..	..	..	..	..	..
21. General tuberculosis	8	....	..	..	..	..	..	1	..	1	4	1	..	1	..	..	..	1	7	....	7	1	....	4	3	1	2	1	2	1	..	..	..	1	..	..	..	1
25. Cancer of stomach and liver	2	....	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	2	....	....	....	2	....	....	2	....	..	1	..	..	..	..	1	..	..	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
31. Tumors	2	...	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	..	..	1	..	1	..	..	..
33. Diabetes	3	....	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	3	....	....	3	....	....	1	1	1	..	..	2	..	..	..	..	1	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	1	....	2	....	....	....	2	....	..	..	2	..	..	..	..	..	..	..	..	..
37. Other general diseases	1	...	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	27	10	1	1	..	..	1	..	1	2	1	1	3	..	3	3	..	13	14	....	20	7	....	15	12	....	2	4	3	1	3	1	2	1	3	3	3	1
39. Meningitis	5	3	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	2	3	....	5	....	....	5	....	....	..	1	..	..	1	..	..	..	1	..	1	1
42. Apoplexy	6	1	..	..	..	..	..	..	..	..	..	1	2	..	1	1	..	3	3	....	2	4	....	1	5	....	..	1	1	..	2	..	1	..	1	..	..	..
44. Paralysis	6	....	..	..	..	..	..	..	..	1	..	..	1	..	2	2	..	3	3	....	3	3	....	1	5	....	..	1	1	..	..	1	..	..	1	1	1	..
46. Other forms of mental disease	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
49. Convulsions	7	4	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	4	3	....	7	....	....	6	1	....	2	..	1	1	..	..	1	1	..	..	1	..
51. Other diseases of nevous system	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	1	..	..	..	..	..	..	..	1	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	16	....	..	..	..	..	..	..	1	..	1	..	1	8	4	1	..	11	5	....	8	7	1	2	14	....	3	1	..	..	2	1	1	..	1	1	2	4
53. Endocarditis	2	...	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	1	....	1	1	....	1	1	....	1	..	..	..	1	..	..	..	..	..	..	..
54. Heart Disease	13	....	..	..	..	..	..	..	..	..	..	..	1	7	4	1	..	10	3	....	6	6	1	1	12	....	1	1	..	.	1	1	1	..	1	1	2	4
57. Embolism and thrombosis	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	30	14	..	1	..	..	..	1	1	1	.	1	1	4	4	1	1	14	16	....	20	10	....	17	12	1	6	3	3	5	5	2	..	1	..	1	3	1
61. Diseases of larynx	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
63. Acute bronchitis	7	6	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3	4	....	6	1	....	6	1	....	2	1	..	2	..	..	..	..	..	1	1	..
65. Broncho-pneumonia	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	1	1	..	..	..	..	..	..	..
66. Pneumonia	15	3	..	..	..	..	..	..	1	1	..	1	1	4	3	..	1	7	8	....	7	8	....	4	10	1	3	2	1	2	2	2	..	1	..	..	2	..
67. Pleurisy	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
68. Congestion of lungs	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
72. Other diseases of respiratory system, phthisis excepted	3	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	1	....	2	1	....	2	1	....	..	..	..	..	2	..	..	..	..	..	..	1
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	18	7	1	..	.	..	..	1	..	1	..	..	2	3	..	3	..	7	11	....	11	7	....	11	7	....	1	..	1	1	3	2	3	..	1	5	..	1
77. Gastritis	6	1	..	..	..	..	..	..	..	..	..	..	2	1	..	2	..	3	3	....	3	3	..	1	5	....	1	..	1	.	2	..	2	..	..	..	..	..
78. Other diseases of stomach	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	1	1	..	..

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CAUSES OF DEATHS BY COUNTIES.—NIPISSING, (including municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29	30-39	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0,1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1. GENERAL DISEASES.																																					
(A. Epidemic Diseases.)																																					
Grand Total	845	286	39	17	9	11	15	16	34	115	66	49	47	48	31	17	45	518	321	6	662	114	79	534	230	81	76	57	76	51	72	70	81	82	75	66	74	65
Group Total	82	17	3	6	3	3	5	3	6	20	7	3	2	2	..	1	1	50	32	....	67	13	2	65	14	3	6	4	6	4	7	6	7	4	13	11	10	4
1. Typhoid Fever	41	....	..	..	..	..	..	3	1	4	19	7	3	..	2	..	1	1	29	12	....	29	10	2	26	12	3	3	2	2	1	1	1	3	2	8	7	8	3
4. Measles	5	3	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	4	....	5	..	....	5	..	....	..	..	..	..	1	2	2	..	..	..	..	..	..
5. Scarlet Fever	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	..	....	1	..	....	..	..	1	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	3	2	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	1	2	..	3	..	....	3	..	....	1	..	..	1	..	..	..	..	..	..	..	..	..
7. Diphtheria and Croup	21	5	1	5	3	2	2	2	1	..	..	..	..	..	..	..	..	11	10	....	20	1	....	21	..	....	..	2	3	..	2	2	..	2	3	4	2	1
8. Influenza	3	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	..	....	3	..	....	..	..	..	1	2	..	..	..	..	..	..	..	..
9. Dysentery	4	3	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	4	..	....	3	1	....	3	1	....	..	..	..	..	..	1	2	..	1	..	..	..	..
10. Erysipelas	4	3	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	3	1	....	3	1	....	3	1	....	2	..	..	1	..	..	..	..	..	..	..	..	..
(B. Other General Diseases.)																																					
Group Total	66	....	3	1	..	..	..	1	5	14	10	7	9	10	5	..	1	34	32	....	55	10	1	24	38	4	7	8	10	5	3	5	2	1	5	11	5	4
12. Septicæmia	5	....	3	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	4	....	4	1	....	4	1	....	..	2	2	..	1	..	..	..	..	..	..	..
13. Tuberculosis of lungs	23	....	..	..	..	..	..	..	3	7	4	2	1	3	3	..	..	9	14	....	20	3	....	8	15	....	..	2	1	5	2	2	1	..	1	4	4	1
15. Tuberculous meningitis	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	..	..	..	..	1
17. Pott's disease	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	..	....	..	....	1	1	..	..	..	..	..	..	..	..	..	..	..	..
21. General tuberculosis	13	....	..	..	..	..	..	..	2	6	2	1	1	1	..	..	..	6	7	....	10	3	....	7	5	1	3	..	1	..	..	1	..	1	2	1	1
25. Cancer of stomach and liver	3	....	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	2	....	2	1	....	2	1	....	..	..	1	..	..	..	1	1	..	..	..	..
30. Cancer of other unspecified organs	4	....	..	..	..	..	..	..	..	..	1	1	1	1	..	..	..	2	2	....	4	..	....	..	4	....	..	..	1	..	..	..	1	..	..	1	..	..	1
32. Rheumatism	4	....	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..	4	..	....	3	..	1	....	4	....	3	1	..	..	..	..	..	..	..	..	..	..	..
33. Diabetes	5	....	..	..	..	..	..	..	..	..	1	1	2	..	1	..	..	1	1	....	4	1	....	....	5	....	..	2	2	..	..	1	..	..	..	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	....	2	..	....	....	2	....	..	..	..	..	..	..	..	..	..	2	..	..	..
35. Alcoholism	4	....	..	..	..	..	..	..	..	..	..	1	..	2	..	..	1	4	..	....	3	1	....	1	1	2	..	1	1	..	..	..	..	..	..	2	..	..	..
37. Other General diseases	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	..	....	1	..	....	..	..	1	..	..	..	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	48	16	2	4	..	..	1	1	2	9	2	2	2	3	1	1	2	31	17	....	40	5	3	33	13	2	2	5	11	2	3	2	6	5	2	2	3	4
38. Encephalitis	3	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	1	....	2	1	....	2	....	1	..	1	2	..	..	..	..	..	..	..	..	..	..
39. Meningitis	14	4	2	2	..	..	1	1	..	2	..	..	..	..	..	..	2	11	3	....	11	2	1	12	2	....	2	..	1	1	2	..	1	4	1	1	..	1

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NIPISSING.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII.—THE PUERPERAL STATE.																																						
Group Total	14	....	..	..	..	..	..	..	1	8	3	2	..	..	..	..	..	....	14	....	13	1	....	....	14	....	5	1	1	..	2	2	2	..	..	..	1	..
106. Puerperal septicæmia	3	....	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	....	3	....	2	1	....	....	3	....	1	..	..	..	2	..	..	..	..	..	..	..
107. Puerperal convulsions	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
108. Other causes incident to child-birth	10	....	..	..	..	..	..	..	6	2	2	..	..	..	..	..	..	....	10	....	10	....	....	....	10	....	4	1	1	..	1	2	..	..	..	1	..
X. MALFORMATIONS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....	2	....	....	2	....	....	..	..	1	..	..	..	..	..	..	..	1	..
116. Congenital malformations (still-births excluded)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....	2	....	....	2	....	....	..	..	1	..	..	..	..	..	..	..	1	..
XI. EARLY INFANCY.																																						
Group Total	81	81	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42	39	....	81	....	....	81	....	....	10	9	9	3	6	2	6	7	11	4	5	9
117. Premature birth	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	8	....	13	....	....	13	....	....	2	2	..	2	..	2	4	1	..	..	..	..
118. Congenital debility	68	68	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37	31	....	68	....	....	68	....	....	8	7	9	1	6	..	2	6	11	4	5	9
119. XII. OLD AGE.																																						
Group Total	21	....	..	..	..	..	..	..	..	..	..	..	..	1	11	9	..	16	5	....	11	4	6	1	20	....	2	..	1	2	3	2	..	..	1	2	4	4
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	140	3	2	1	2	3	..	4	7	39	22	17	7	3	..	1	29	131	9	....	61	46	33	61	28	51	16	2	4	5	8	18	22	10	11	11	14	19
120. Suicides	5	....	..	..	..	..	..	..	..	1	..	1	1	..	..	..	2	5	....	....	....	3	2	1	1	3	1	..	..	..	..	1	1	..	1	..	..	1
121. Fractures and dislocations	7	....	..	..	..	..	..	..	..	2	1	2	..	..	..	..	2	7	....	....	3	2	2	3	1	3	..	..	..	..	1	..	..	..	2	3	..	1
122. Burns and Scalds	9	1	1	..	2	3	..	1	..	..	..	..	..	..	..	..	1	4	5	....	7	2	....	9	....	....	2	..	..	1	1	1	1	..	..	..	..	3
123. Physical phenomena	5	....	..	..	..	..	..	..	..	2	..	3	..	..	..	..	..	5	....	....	2	2	1	4	1	....	1	..	1	..	..	1	1	..	..	..	1	..
124. Drowning	32	....	..	..	..	..	2	3	13	3	2	..	..	..	..	..	9	32	....	....	23	3	6	13	3	16	1	..	..	..	3	10	12	2	1	..	1	2
126. Other accidental poisonings	4	....	1	..	..	..	..	..	..	1	..	..	..	1	..	..	1	3	1	....	4	....	....	2	2	....	1	..	..	..	..	..	1	2	..	..	..	..
127. Other accidental traumatisms	72	....	..	..	..	..	..	1	4	17	18	9	6	2	..	1	14	72	....	....	19	31	22	25	18	29	10	2	3	3	4	2	4	6	6	8	12	12
128. Injuries at birth	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	2	..	..	..	..	..
129. Homicide	4	....	..	1	..	..	..	..	3	..	..	..	..	..	..	..	..	2	2	....	1	3	....	2	2	....	..	..	..	..	..	3	..	..	1	..	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	81	27	6	3	1	1	3	1	2	5	2	5	7	7	3	1	7	42	39	....	65	3	13	49	27	5	7	8	12	3	7	8	8	9	4	5	5	5
130. Dropsy	8	....	..	..	..	..	..	..	..	..	..	1	1	3	2	1	..	6	2	....	3	1	4	..	8	....	..	..	1	1	2	1	..	..	2	..	1	..
131. Heart failure	17	1	..	1	..	..	..	..	2	2	3	3	2	1	..	2	11	6	....	12	....	5	5	10	2	3	2	1	..	2	2	1	3	..	..	2	1
132. Other ill-defined causes	48	22	5	1	1	..	2	1	2	3	..	1	3	2	..	..	5	24	24	....	43	1	4	36	9	3	3	6	8	2	2	4	7	6	2	5	1	2
133. Unknown causes	8	4	1	1	..	1	1	..	..	..	..	..	..	..	..	..	..	1	7	....	7	1	....	8	....	....	1	..	2	..	1	1	..	..	..	..	1	2
134. XV. STILL BIRTHS.																																						
Group Total	47	47	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18	23	6	47	....	....	47	....	....	3	3	1	6	5	8	3	1	2	6	3	6

CAUSES OF DEATHS BY COUNTIES—NORFOLK (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. Jan.	Feb.	March	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																						
(A. *Epidemic Diseases.*)																																						
Grand Total	**348**	**69**	**9**	**2**	**4**	**1**	**8**	**7**	**5**	**18**	**12**	**17**	**25**	**57**	**65**	**48**	**1**	**189**	**159**	**...**	**284**	**57**	**7**	**130**	**218**	**2**	**22**	**36**	**40**	**31**	**29**	**33**	**22**	**25**	**18**	**35**	**29**	**28**
Group Total	**25**	1	2	2	2	..	4	..	2	2	1	2	1	1	1	..	1	13	12	...	24	1	....	17	8	....	2	2	1	1	5	1	1	.	3	2	1	6
1. Typhoid Fever	2	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	2	....	....	2	....	....	1	1	....	1	....	....	....	....	....	....	....	....	1	....	....
4. Measles	5	....	1	1	....	....	1	....	....	....	....	....	1	....	1	....	....	4	1	....	5	....	....	3	2	....	....	2	....	....	2	1	....	....	....	....	....	....
6. Whooping Cough	2	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	2	....	....	2	....	....	....	....	....	....	2	....	....	....	....	....	....	....
7. Diphtheria and Croup	10	....	....	1	2	....	3	..	2	2	....	....	....	....	....	....	....	5	5	....	10	....	....	5	5	....	1	....	....	....	....	1	..	3	1	..	4
8. Influenza	2	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	2	....	1	1	....	1	1	....	....	....	1	..	1	....	....	....	....	....	....	....
10. Erysipelas	2	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	2	....	2	....	....	1	1	....	....	....	....	1	....	....	....	....	....	....	....	1
11. Other epidemic diseases	2	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	1	....	2	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	1	1
(B. *Other General Diseases.*)																																						
Group Total	**46**	3	....	....	....	....	2	3	.	2	4	7	8	7	7	3	..	21	22	...	42	3	1	13	33	..	1	1	7	4	3	4	5	5	2	6	1	4
12. Septicæmia	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....
13. Tuberculosis of lungs	7	1	....	....	....	....	1	1	....	....	1	1	2	....	....	....	....	5	2	....	6	1	....	4	3	....	....	....	1	1	..	2	....	1	..	1	1	....
15. Tuberculosis meningitis	2	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	2	....	....	2	....	....	2	....	....	....	....	2	....	....	....	....	....	....	....	....	....
21. General Tuberculosis	4	....	....	....	....	....	....	....	....	2	1	....	1	....	....	....	....	2	2	....	4	....	....	3	1	....	....	....	1	1	....	....	1	....	....	....	....	1
25. Cancer of stomach and liver	3	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	2	1	....	3	....	....	....	3	....	....	1	....	....	....	....	....	....	1	1	....	....
26. Cancer of the intestines	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....
29. Cancer of skin	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	1	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....
30. Cancer of other unspecified organs	12	....	....	....	....	....	....	....	....	....	1	2	2	4	3	....	....	5	7	....	10	1	1	1	11	....	1	2	1	..	1	1	2	1	..	2	..	1
32. Rheumatism	4	....	....	....	....	....	....	....	....	....	....	....	1	....	1	1	....	2	2	....	3	1	....	1	3	....	....	....	....	1	....	....	....	....	....	1	..	2
33. Diabetes	4	....	....	....	....	....	....	....	....	....	1	2	1	....	....	....	....	2	2	....	4	....	....	....	4	....	....	....	....	....	1	1	1	....	....	....	....	....
34. Anæmia, leukæmia	4	1	....	....	....	....	....	....	....	....	....	....	....	2	....	1	..	1	3	..	4	....	....	1	3	....	....	....	....	1	1	....	....	2	....	....	....	....
35. Alcoholism	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	1	....	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....
37. Other general diseases	2	....	....	....	....	....	....	....	....	....	....	1	..	1	....	....	....	1	1	..	2	....	....	....	2	....	....	1	....	....	....	....	....	....	....	1	....	....

NORFOLK.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	54	8	1	..	..	..	1	2	..	..	..	3	5	14	14	6	..	26	28	....	45	9	....	16	37	1	5	5	4	9	4	6	3	3	3	1	8	3
39. Meningitis	2	1	..	..	..	..	.	1	..	..	..	.	.	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	..	..	1	..	..	1	..
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..
41. Other diseases of spinal cord	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	1	..	..	1	..	..	..	..
42. Apoplexy	23	..	..	..	..	..	..	..	..	..	..	..	4	9	6	4	..	13	10	....	18	5	....	1	21	1	1	2	2	6	2	2	1	..	1	4	2
43. Softening of Brain	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
44. Paralysis	13	....	..	..	..	..	..	..	..	..	..	1	..	4	6	2	..	8	5	....	11	2	....	2	11	....	2	2	1	2	1	1	2	..	1	..	1	..
48. Epilepsy	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	1	..	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
49. Convulsions	8	7	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	3	5	....	8	....	....	8	....	....	2	..	1	1	..	2	..	..	1	..	1	..
50. Tetanus	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
51. Other diseases of nervous system	2	....	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	1	..	1	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	29	1	..	..	..	..	..	1	..	3	..	1	4	6	9	4	..	18	11	...	18	10	1	5	24	....	..	4	3	..	1	2	1	3	1	7	5	2
54. Heart disease	27	....	..	..	..	..	..	1	..	2	..	1	4	6	9	4	..	16	11	....	16	10	1	3	24	....	..	3	3	..	1	2	..	3	1	7	5	2
55. Angina pectoris	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	43	11	4	..	..	1	..	..	..	1	1	1	5	6	7	6	..	26	17	....	35	7	1	19	24	....	2	5	11	4	4	2	1	..	2	5	3	4
63. Acute bronchitis	6	3	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	3	3	....	5	1	....	4	2	....	1	..	..	..	2	1	..	..	1	..	..	1
64. Chronic bronchitis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
65. Broncho-pneumonia	6	2	1	..	..	..	..	..	..	..	..	..	1	1	..	1	..	2	4	....	4	2	..	3	3	....	..	..	1	2	..	..	1	..	..	2	..	..
66. Pneumonia	26	5	2	..	..	1	..	..	..	1	1	1	3	4	5	3	..	18	8	....	23	2	1	10	16	....	1	4	9	3	1	..	1	..	2	3	2
70. Asthma and Emphysema	3	1	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	2	1	....	2	1	....	1	2	....	..	..	..	1	..	..	..	1	1	..	..	..
72. Other diseases of respiratory system, phthisis ex	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	21	8	1	..	..	..	..	..	1	2	..	1	..	3	2	3	..	8	13	....	19	2	....	11	10	....	2	1	2	3	1	4	2	2	2	..	1	1
78. Other diseases of the stomach	6	3	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	2	4	....	5	1	....	3	3	....	1	..	1	..	..	2	..	1	..	..	1	..
80. Diarrhœa and enteritis (under 2 years)	6	5	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	4	....	6	....	....	6	....	....	..	..	..	1	1	..	1	1	..	1	..	1
81. Diarrhœa and enteritis (2 years and over)	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
82. Hernia	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
83. Obstruction of intestines	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	1	..	1	..	..	..	..	..
87. Cirrhosis of liver	2	....	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	2	....	....	2	....	....	....	2	....	1	..	..	..	..	..	1	..	..	..	..	..
88. Biliary calculi	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
91. Peritonitis (non-puerperal)	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
92. Appendicitis	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..

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CAUSES OF DEATHS BY COUNTIES—NORTHUMBERLAND AND DURHAM (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29	30-39.	40-49.	50-59.	60-69.	70-79.	80 & over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases*).																																					
Grand Total	869	137	15	8	6	4	12	9	20	51	54	45	64	107	168	168	1	473	395	1	570	285	14	307	529	33	86	100	75	87	84	67	51	53	57	65	76	68
Group Total	31	3	3	..	1	..	2	2	3	1	2	2	1	4	4	3	..	18	13	....	22	9	....	17	13	1	3	5	3	4	1	2	3	1	3	..	3	3
1. Typhoid Fever	10	....	1	..	..	..	..	..	1	..	2	2	1	2	1	..	..	8	2	....	7	3	....	4	6	....	1	2	..	..	..	1	1	1	1	..	1	2
4. Measles	2	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	2	..	..	..	..	..	..	..	..
6. Whooping Cough	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	1	..	..	..	..	..	1	..	..	..	..	..
7. Diphtheria and Croup	2	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	1	..	1	..
8. Influenza	10	1	1	..	..	..	..	..	2	..	..	..	1	2	3	..	..	5	5	....	5	5	....	5	4	1	1	3	3	1	1	..	..	..	..	..	..	1
9. Dysentery	3	....	..	..	..	..	..	..	..	1	..	..	1	1	..	..	..	3	....	....	2	1	....	....	3	....	..	..	..	..	..	1	1	..	1	..	..	..
10. Erysipelas	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
11. Other epidemic diseases	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
(*B. Other General Diseases*).																																					
Group Total	137	1	2	1	..	..	1	2	9	23	17	15	23	22	16	5	..	65	72	....	107	30	....	41	92	4	11	10	10	12	15	11	10	7	14	9	15	13
12. Septicæmia	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
13. Tuberculosis of lungs	31	....	..	..	..	..	..	..	6	11	7	2	3	1	1	..	..	20	11	....	26	5	....	15	11	2	4	..	4	4	3	1	3	2	..	1	4	5
14. Tuberculosis of larynx	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
15. Tuberculous meningitis	3	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	3	....	....	3	....	....	2	....	1	..	1	..	..	1	..	..	..	1	..	..	..
19. White swelling	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
20. Tuberculosis of other organs	2	....	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	1	....	2	....	....	1	1	....	1	..	..	1	..	..	..	..	..	..	..	..
21. General Tuberculosis	26	....	..	..	..	..	1	..	8	8	2	5	2	..	..	..	..	12	14	....	22	4	....	8	18	....	..	3	..	3	1	4	1	2	2	3	5	2
24. Cancer of mouth	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..
25. Cancer of stomach and liver	8	....	..	..	..	..	..	..	..	..	..	3	3	1	1	..	..	3	5	....	8	....	....	....	8	....	..	1	..	1	..	2	1	..	1	1	..	1
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
29. Cancer of skin	2	....	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2	....	....	2	....	....	....	2	....	1	..	1	..	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	29	....	2	..	..	..	..	..	..	..	..	4	6	7	7	3	..	8	21	....	18	11	....	5	23	1	3	1	2	1	2	1	2	6	4	3	3
32. Rheumatism	8	....	..	..	..	..	..	..	..	1	..	..	2	5	..	..	..	2	6	....	5	3	....	1	7	....	..	2	1	..	..	1	2	..	1	..	1	..
33. Diabetes	7	....	..	..	..	..	..	1	..	2	..	..	2	1	1	..	..	4	3	....	7	....	....	2	5	....	..	1	..	..	2	1	1	..	2	..	..	..
34. Anæmia, leukæmia	11	....	..	..	..	..	1	..	..	..	2	1	..	3	3	1	..	5	6	....	6	5	....	2	9	....	1	..	1	..	4	..	1	1	..	..	1	2
35. Alcoholism	3	....	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	3	....	....	3	....	....	2	1	....	1	..	1	1	..	..	..	..	..	..	..	..
37. Other general diseases	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	1	1	..	..	..	..	..	..

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NORTHUMBERLAND AND DURHAM—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	29	2	1	..	..	..	..	..	..	3	2	3	3	3	7	5	..	19	10	....	15	13	1	5	23	1	1	3	2	2	3	3	..	4	1	..	7	3
94. Acute nephritis	3	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	1	...	2	1	....	1	2	....	..	..	..	..	..	1	..	..	..	..	1	1
95. Bright's disease	14	....	..	..	..	..	..	..	..	3	1	2	3	2	3	..	..	8	6	....	7	6	1	2	11	1	1	1	1	1	1	..	3	1	..	4	1
96. Other diseases of kidneys	2	....	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	..	..	1	1
97. Calculi of urinary tract	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
98. Diseases of bladder	7	1	..	..	..	..	..	..	..	..	..	..	..	..	1	5	..	7	....	....	3	4	....	1	6	....	..	1	1	..	2	1	..	1	..	..	1	..
105. Other diseases of the genito-urinary system	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	....	2	....	....	....	2	...	..	1	..	1	..	..	..	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	4	....	..	..	..	..	..	..	..	2	1	1	..	..	..	..	..	....	4	....	4	....	....	....	4	....	1	1	..	1	..	..	1	..	..	..	..	..
106. Puerperal septicæmia	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
108. Other causes incident to childbirth	3	....	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	....	3	....	3	....	....	....	3	....	..	1	..	1	..	..	1	..	..	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	13	....	..	..	..	..	..	..	..	1	..	1	1	3	7	..	..	4	9	....	7	6	....	2	10	1	3	..	2	2	3	1	..	2	..	..	..	..
109. Gangrene	9	....	..	..	..	..	..	..	..	..	..	1	..	3	5	..	..	3	6	....	6	3	...	1	7	1	2	..	2	2	1	..	..	2	..	..	..	..
111. Abscess	3	....	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	1	2	....	1	2	....	1	2	....	1	..	..	..	..	1	1	..	..	..	..	..
112. Other diseases of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	...	1	....	....	1	....	....	1	...	..	..	..	..	1	..	..	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	2	...	2	....	....	2	....	....	..	..	..	1	..	..	1	..	..	..	..	..
116. Congenital malformation (still-births excluded)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	1	..	..	1	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	26	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	13	....	26	....	....	26	....	....	5	2	2	1	4	6	1	..	..	2	3
117. Premature birth	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	7	....	13	....	....	13	....	....	3	..	..	..	2	4	1	..	..	2	1
118. Congenital debility	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	4	....	13	...	....	13	....	....	2	2	2	1	2	2	..	..	..	..	2
119. XII. OLD AGE.																																						
Group Total	123	....	....	..	..	..	..	..	..	..	..	..	..	6	25	92	..	65	58	....	42	77	4	11	109	3	20	19	10	9	10	7	6	5	4	17	9	7

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases).																																						
Group Total	82	5	..	..	..	..	1	1	4	14	8	11	11	12	13	2	..	33	49	....	64	18	....	29	49	4	7	12	5	10	6	7	8	3	5	8	2	9
12. Septicæmia	2	....	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	2	..	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	2	..	..	..
13. Tuberculosis of lungs	25	1	..	..	..	..	1	2	10	3	3	3	1	1	..	..	..	8	17	....	23	2	....	11	13	1	2	8	..	5	1	3	2	..	1	..	..	3
21. General Tuberculosis	12	2	..	..	..	..	..	2	3	..	2	2	..	1	..	..	..	7	5	....	12	....	....	6	6	....	1	..	2	1	2	1	2	..	..	2	..	1
25. Cancer of stomach and liver	10	....	..	..	..	..	..	..	..	..	..	..	2	1	7	..	..	5	5	....	4	6	....	2	7	1	1	1	1	1	..	1	1	..	..	1	1	2
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	1	....	....	..	1	....	..	..	..	..	..	1	..	..	..	..	..	..
30. Cancer of other unspecified organs	11	....	..	..	..	..	..	..	..	..	2	..	6	1	2	..	..	3	8	....	7	4	....	2	9	....	1	1	..	1	..	2	3	..	2	..	1
32. Rheumatism	8	2	..	..	..	..	..	..	..	2	1	1	1	1	..	..	..	2	6	....	6	2	....	3	4	1	2	..	..	..	1	1	..	..	1	2	..	1
33. Diabetes	3	....	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	1	2	....	3	....	....	2	1	....	..	..	1	..	..	..	1	..	..	..	..	1
34. Anæmia, leukæmia	10	....	..	..	..	..	..	..	..	2	1	2	3	2	..	..	..	5	5	....	7	3	....	2	7	1	..	2	1	2	2	..	..	..	1	1	1	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	51	12	2	..	.	1	2	..	..	3	1	4	6	9	8	3	..	21	30	....	32	19	....	23	27	1	4	5	5	2	5	6	6	5	4	3	3	3
39. Meningitis	6	3	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	1	5	...	6	....	....	6	....	....	..	1	..	..	..	2	1	..	..	..	1	1
41. Other diseases of spinal cord	3	....	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	3	....	2	1	....	....	3	....	..	..	..	..	1	1	..	..	..	..	..	..
42. Apoplexy	16	....	..	..	..	..	..	..	..	..	..	1	2	5	6	2	..	5	11	....	6	10	....	1	14	1	1	1	2	1	1	1	2	3	1	2	..	1
44. Paralysis	12	1	..	..	..	..	..	..	..	1	..	2	2	3	2	1	..	8	4	....	5	7	....	2	10	....	3	2	..	..	2	1	1	..	1	1	1	..
48. Epilepsy	3	....	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	1	2	....	3	....	....	3	....	....	..	1	..	1	..	..	..	1	..	..	..	..
49. Convulsions	11	8	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	6	5	....	10	1	....	11	....	....	..	..	3	..	2	1	1	..	2	..	1	1
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	56	4	..	..	..	..	..	1	..	1	..	5	5	8	21	10	1	28	28	....	30	26	....	11	45	....	3	3	5	8	3	5	5	3	3	6	3	9
53. Endocarditis	2	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	....	2	....	....	2	....	1	1	....	..	..	1	..	..	1	..	..	..	..	..	..
54. Heart disease	45	4	..	..	..	..	..	..	..	1	..	2	4	7	18	8	1	22	23	....	24	21	....	8	37	....	3	3	5	7	1	5	4	1	1	6	2	7
56. Diseases of arteries	8	....	..	..	..	..	..	..	..	..	..	2	1	..	3	2	..	6	2	....	5	3	....	2	6	....	..	..	..	..	2	..	..	1	2	..	1	2
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
IV. DISEASES OE RESPIRATORY SYSTEM.																																						
Group Total	71	11	5	3	1	..	1	..	..	4	2	6	7	7	9	15	..	35	36	....	47	22	2	28	39	4	8	15	5	6	3	5	9	2	4	5	6	3
61. Diseases of larynx	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	1	....	....	....	....	1	..	..	..	1	..	..	..	..	..	..	..	..
63. Acute bronchitis	9	4	..	..	..	..	..	..	..	..	..	..	..	..	1	4	..	3	6	....	6	2	1	4	5	....	1	3	1	..	..	..	..	..	1	1	1	1
64. Chronic bronchitis	3	....	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	1	2	....	2	1	....	1	2	....	..	..	..	..	..	..	..	..	1	1	..	..
65. Broncho-pneumonia	12	4	3	1	..	..	..	..	..	..	1	3	..	..	..	..	..	6	6	...	11	1	....	9	3	....	..	1	1	3	..	1	2	..	1	..	2	1
66. Pneumonia	40	3	2	2	1	..	1	..	..	3	2	4	4	4	7	7	..	20	20	....	25	14	1	13	25	2	7	10	3	2	3	3	6	2	..	2	2	..
68. Congestion of lungs	3	....	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	2	1	....	....	3	....	....	2	1	....	..	1	..	..	..	..	..	..	..	1	1
70. Asthma and emphysema	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
71. Hemorrhage of lungs	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
72. Other diseases of respiratory system (phthisis ex.)	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	37	9	2	1	1	..	2	1	..	1	5	1	3	3	4	3	1	20	17	....	27	9	1	23	13	1	1	3	3	10	1	1	3	3	5	2	1	4
76. Ulcer of stomach	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
77. Gastritis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	1	..	..	..	1

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ONTARIO.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	25	5	..	..	..	..	..	..	..	..	1	2	2	3	10	1	1	14	11	....	12	13	....	5	19	1	1	6	4	2	2	..	2	3	3	..	..	2
130. Dropsy	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1
131. Heart Failure	16	1	..	..	..	..	..	..	..	..	1	1	2	3	7	1	..	8	8	....	8	8	....	1	14	1	1	5	1	2	2	..	1	2	1	..	..	1
132. Other ill-defined causes	8	4	..	..	..	..	..	..	..	..	..	1	..	..	3	..	..	6	2	....	4	4	....	4	4	....	..	1	3	..	..	..	1	1	2	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	35	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	14	....	35	....	....	35	....	....	1	1	5	4	1	4	7	5	2	..	5	1

CAUSES OF DEATHS BY COUNTIES—OXFORD (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not Stated.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	714	121	21	11	3	5	7	7	8	47	50	48	51	85	142	93	..	369	342	3	472	223	4	266	425	8	54	73	76	71	70	49	46	60	48	59	36	57
Group Total	33	13	4	1	1	....	..	1	..	3	3	1	2	1	1	2	..	19	14	....	29	4	....	25	8	....	2	2	5	3	2	7	1	4	1	5	..	1
1. Typhoid Fever	6	....	..	..	..	..	..	..	..	1	2	1	1	..	1	..	..	3	3	....	4	2	....	1	5	....	..	..	..	..	..	1	..	1	1	3	..	..
4. Measles	4	1	1	..	..	..	..	..	..	1	..	..	..	..	..	1	..	2	1	....	4	....	....	4	....	....	..	..	..	1	..	2	1	..	..	..	..	..
5. Scarlet Fever	2	....	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	2	..	....	2	....	....	2	....	....	1	..	..	..	..	..	..	..	..	..	..	1
6. Whooping Cough	10	7	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	2	....	8	2	....	10	....	....	..	..	..	1	..	5	..	3	..	1	..	..
7. Diphtheria and Croup	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	1	..	..	..	..	..	..	..	..	1	..	..
8. Influenza	8	4	..	1	..	..	..	..	..	..	..	..	1	2	....	1	..	3	5	....	8	....	....	6	2	....	..	2	3	2	..	..	1	..	..	..	..	..
10. Erysipelas	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..

(*B. Other General Diseases.*)

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OXFORD.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	38	7	2	1	..	2	1	1	1	..	2	3	2	4	5	7	..	19	19	....	28	10	....	19	19	....	..	7	6	4	2	2	1	6	4	2	2	2
75. Other diseases of pharynx	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
78. Other diseases of the stomach	7	3	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	3	4	....	6	1	....	3	4	....	..	3	..	..	1	..	1	1	..	1	..	..
80. Diarrhœa and enteritis, (under 2 years)	5	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	4	....	4	1	....	5	....	....	..	..	..	..	..	..	..	2	1	..	1	1
83. Obstruction of intestines	5	....	..	..	..	1	1	..	..	..	..	2	..	..	..	1	..	3	2	....	5	....	....	4	1	....	..	..	..	1	..	..	..	2	..	1	..	1
84. Other diseases of intestines	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
87. Cirrhosis of liver	3	....	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	2	1	....	1	2	....	1	2	....	..	1	..	1	..	..	..	..	..	..	1	..
88. Biliary calculi	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
89. Other diseases of the liver	4	....	..	..	..	..	..	..	..	..	..	1	1	..	1	1	..	4	....	....	1	3	....	....	4	....	..	..	3	..	1	..	..	..	..	..	..	..
91. Peritonitis, non-puerperal	7	....	..	..	..	1	..	..	..	..	1	..	..	2	1	2	..	2	5	....	4	3	....	1	6	....	..	..	3	1	..	2	..	..	1	..	..	..
92. Appendicitis	4	....	..	..	..	..	..	1	1	..	..	..	..	..	2	..	..	3	1	....	4	....	....	2	2	....	..	3	..	..	..	..	..	1	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	37	....	1	..	..	..	..	..	..	3	2	4	4	7	10	6	..	20	17	....	19	18	....	4	31	2	4	3	5	2	5	3	1	3	4	3	3	1
94. Acute nephritis	3	....	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..	1	2	....	3	....	....	....	2	1	1	2	..	..	..	..	..	..	..	..	..	..	..
95. Bright's Disease	21	....	..	..	..	..	..	..	..	2	2	2	4	6	4	4	..	12	12	....	11	13	....	2	21	1	1	1	4	1	5	2	..	3	4	1	2	..
96. Other diseases of kidneys	3	....	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	....	3	....	2	1	....	1	2	....	1	..	1	..	..	1	..	..	..	..	..	..	..
98. Diseases of bladder	3	....	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	3	....	....	2	1	....	1	2	....	..	..	..	..	..	..	..	1	..	..	1	..	1
105. Other diseases of the genito-urinary system	4	....	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	4	....	....	1	3	....	....	4	....	1	..	..	1	..	..	..	..	..	1	1	..
VII. THE PUERPERAL STATE.																																						
Group Total	4	....	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	....	4	....	3	1	....	....	4	....	1	..	..	..	..	..	..	1	..	..	1	1
108. Other causes incident to childbirth	4	....	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	....	4	....	3	1	....	....	4	..	1	..	..	..	..	..	..	1	..	..	1	1
VIII. DISEASES OF SKIN.																																						
Group Total	7	....	..	..	..	..	..	..	..	..	..	..	1	..	3	3	..	6	1	....	1	6	....	2	5	....	1	2	1	1	1	..	..	..	..	..	..	1
109. Gangrene	6	....	..	..	..	..	..	..	..	..	..	..	..	..	3	3	..	5	1	....	....	6	....	2	4	....	1	2	1	..	1	..	..	..	..	..	..	1
111. Abcess	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	..	1	....	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..
IX. DISEASES OF LOCOMOTOR SYSTEM.																																						
Group Total	3	....	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	3	....	...	2	1	....	1	2	....	..	2	1	..	..	..	..	..	..	..	..	..
113. Diseases of the bones	3	....	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	3	....	....	2	1	....	1	2	....	..	2	1	..	..	..	..	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
116. Congenital Malformations (still-births excluded)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	..	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	28	28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	13	2	28	....	....	28	....	....	3	1	2	1	2	..	1	..	..	3	..	..
117. Premature birth	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	7	2	13	....	....	13	....	....	3	1	2	1	2	..	1	..	..	3	..	..
118. Congenital debility	15	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	6	....	15	....	....	15	....	....	1	2	3	1	..	1	1	..	4	2	..	..

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	42	..	1	..	..	..	..	..	2	11	2	5	12	6	2	1	..	26	16	....	32	10	....	10	31	1	5	6	2	3	5	5	2	4	1	6	2	1
12. Septicæmia	4	..	1	..	..	..	..	..	1	1	..	..	1	..	..	..	..	2	2	....	4	..	....	3	1	....	..	1	..	..	1	1	1	..	..	..	..	..
13. Tuberculosis of lungs	8	..	..	..	..	..	..	..	..	4	..	..	4	..	..	..	..	6	2	....	5	3	....	2	5	1	1	3	..	1	..	2	..	..	..	..	..	1
21. General tuberculosis	8	..	..	..	..	..	..	1	3	1	2	..	1	..	..	..	..	4	4	....	6	2	....	2	6	....	1	2	..	..	1	..	2	..	2	..	..	..
25. Cancer of stomach and liver	4	..	..	..	..	..	..	..	..	..	..	..	1	1	2	..	..	4	..	....	3	1	....	..	4	....	..	..	1	..	1	1	..	..	1	..	..	..
30. Cancer of other unspecified organs	8	..	..	..	..	..	..	..	..	1	1	4	1	..	1	..	..	4	4	....	7	1	....	1	7	....	3	..	..	..	1	..	1	..	2	1	..	..
32. Rheumatism	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	1	..	..	..	..	..	..	..	..
33. Diabetes	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	....	..	1	....	..	1	....	..	..	1	..	..	..	..	..	..	..	..	..
34. Anæmia, leukæmia	4	..	..	..	..	..	..	..	1	..	..	1	2	..	..	..	..	1	3	....	4	..	....	..	4	....	..	..	..	..	..	1	1	1	..	1	..	..
35. Alcoholism	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	..	1	....	1	..	....	..	..	..	..	..	..	..	..	..	1	..	..
37. Other general diseases	3	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	2	1	....	2	1	....	..	3	....	..	..	..	1	1	..	..	..	..	1	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	21	10	..	1	..	..	3	1	2	..	1	..	1	3	1	1	..	15	9	....	21	3	....	17	7	....	3	2	4	2	2	1	1	3	2	2	1	1
38. Encephalitis	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	1	..	....	1	..	....	..	..	..	..	..	..	..	1	..	..	..	..
39. Meningitis	4	1	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	3	1	....	4	..	....	4	..	....	1	1	1	1	..	..	..	..	..	..	..	..
42. Apoplexy	3	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	1	....	2	1	....	1	2	....	..	..	1	..	..	..	..	1	..	..	1	..
41. Paralysis	4	..	..	..	..	..	..	..	..	1	..	1	1	..	1	..	..	2	2	....	2	2	....	..	4	....	1	..	..	..	1	..	..	..	1	..	..	1
47. Other diseases of brain	2	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	1	1	....	2	..	....	2	..	....	1	..	..	..	..	..	1	..	..	..	..	..
49. Convulsions	10	8	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	7	3	....	10	..	....	9	1	....	..	1	2	1	1	1	..	1	1	2	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	41	1	..	..	..	..	1	..	1	2	1	4	10	7	7	3	1	17	24	....	22	14	5	6	34	1	5	3	4	5	5	5	3	3	..	5	1	2
53. Endocarditis	10	..	..	..	..	..	..	..	..	..	1	1	1	2	1	4	..	6	4	....	6	3	1	3	7	....	1	1	2	3	..	1	1	..	..	..	..	1
54. Heart disease	17	..	..	..	..	..	..	..	1	..	1	3	5	3	1	2	..	5	12	....	8	7	2	....	16	1	1	1	1	1	4	3	1	2	..	3	..	..
56. Diseases of arteries	8	..	..	..	..	..	..	..	..	..	..	..	3	2	2	1	..	5	3	....	2	4	2	....	8	....	1	1	..	1	1	..	1	..	..	1	1	1
57. Embolism and thrombosis	2	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2	....	2	..	....	..	2	....	1	..	..	..	..	1	..	..	..	..	..	..
60. Other diseases of circulatory system	4	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	1	3	....	4	..	....	3	1	....	1	..	1	..	..	..	..	1	..	1	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	47	16	2	1	1	..	2	..	5	4	4	2	..	5	4	1	..	28	19	....	37	7	3	32	13	2	11	5	8	1	5	6	2	..	1	2	2	4
63. Acute Bronchitis	7	5	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	4	3	....	6	1	....	6	1	....	1	..	3	..	1	..	..	..	..	..	1	1
65. Broncho-pneumonia	3	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	..	....	3	..	....	1	..	..	..	1	..	..	..	1	..	..	..
66. Pneumonia	29	7	1	1	..	..	1	..	4	3	4	2	..	5	..	1	..	17	12	....	23	3	3	18	9	2	8	4	5	..	2	6	2	..	..	..	..	2
68. Congestion of lungs	3	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	1	....	2	1	....	1	2	....	1	1	..	1	..	..	..	..	..	..	..	..
70. Asthma and emphysema	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	..	1	....	..	1	....	..	..	..	..	..	..	..	..	..	..	1	..
71. Hemorrhage of lungs	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	..	1	..	..
72. Other diseases of respiratory system (phthisis ex.)	3	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	2	1	....	2	1	....	3	..	....	..	..	..	..	1	..	..	..	..	1	..	1
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	25	11	4	..	..	..	..	..	1	..	2	..	..	2	5	..	..	12	13	....	18	6	1	17	8	....	2	1	2	2	..	2	1	6	4	3	..	2
77. Gastritis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	..	....	1	..	....	..	..	1	..	..	..	..	..	..	..	..	..
78. Other diseases of the stomach	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	....	1	1	....	1	1	....	1	..	..	1	..	..	..	..	..	..	..	..

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CAUSES OF DEATHS BY COUNTIES—PEEL (including Municipalities of all classes), 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Male.	Female.	Not stated.	Canadian.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	270	32	3	3	3	..	5	3	5	23	17	24	20	34	49	48	1	154	116	....	178	87	5	114	142	14	18	25	28	22	34	26	26	18	22	22	18	13
Group Total	7	2	..	..	1	..	..	..	..	1	1	..	1	..	1	..	..	4	3	....	4	3	....	5	2	....	1	1	..	..	1	1	..	..	..	2	..	1
7. Diphtheria and Croup	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
8. Influenza	5	2	..	..	..	..	..	..	1	..	..	1	..	1	..	1	..	4	1	....	2	3	....	4	1	....	1	1	..	..	1	..	..	..	..	1	..	1
10. Erysipelas	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
(*B. Other General Diseases.*)																																					
Group Total	41	1	..	..	1	..	2	..	2	7	3	6	..	11	6	2	..	16	25	....	36	5	....	19	20	2	1	5	6	4	8	4	2	3	1	4	3	..
12. Septicæmia	3	....	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	1	2	....	3	....	....	2	1	....	1	..	..	..	1	1	..	..	..	..	..	..
13. Tuberculosis of lungs	11	....	..	..	1	..	..	..	1	3	1	2	..	3	..	..	..	6	5	....	10	1	....	6	4	1	..	2	1	2	1	1	1	2	1	..	..
15. Tuberculous meningitis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
21. General Tuberculosis	5	....	..	..	..	..	..	..	1	..	..	2	..	2	..	..	..	1	4	....	5	....	....	2	2	1	..	..	1	..	3	..	..	..	..	1	..	..
25. Cancer of stomach and liver	4	....	..	..	..	..	..	..	..	..	..	1	..	1	1	1	..	2	2	....	2	2	....	....	4	....	..	..	1	..	..	1	..	..	..	1	1	..
30. Cancer of other unspecified organs	6	....	..	..	..	..	..	..	..	1	..	..	..	4	1	..	..	1	5	....	6	....	....	2	4	....	..	..	2	1	..	..	1	..	..	1	1	..
33. Diabetes	3	....	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	1	2	....	3	....	....	2	1	....	..	3	..	..	..	..	..	..	..	..	..	..
34. Anæmia, leukæmia	7	1	..	..	..	..	..	..	..	1	1	1	..	1	2	..	..	3	4	....	6	1	....	5	2	....	..	..	1	1	2	1	..	1	..	..	1	..
37. Other General diseases	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	28	4	..	..	1	..	3	1	..	1	..	..	4	4	7	3	.	16	12	....	20	8	....	12	15	1	3	3	7	2	1	.	3	..	2	3	..	4
39. Meningitis	6	2	..	..	1	..	2	1	..	..	..	..	..	..	..	..	..	4	2	....	6	....	....	6	....	....	..	1	1	2	..	..	..	..	1	..	..	1
41. Other diseases of spinal cord	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
42. Apoplexy	5	....	..	..	..	..	..	..	..	..	..	..	2	1	2	..	..	4	1	....	1	4	....	....	4	1	..	2	..	..	..	..	2	..	..	1	..	..
44. Paralysis	9	....	..	..	..	..	..	..	..	..	..	2	..	6	1	..	..	1	8	....	6	3	....	1	8	....	1	..	..	..	1	..	..	..	2	..	..	..
47. Other diseases of brain	3	....	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	2	1	....	2	1	....	1	2	....	..	..	..	..	..	1	..	..	..	..	..	..
49. Convulsions	1	2	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	4	....	....	4	....	....	4	....	....	2	..	2	..	..	..	..	..	..	..	..	..

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PEEL.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	24	2	..	1	..	..	..	..	..	3	2	4	5	1	5	1	..	11	13	....	16	5	3	9	12	3	..	3	3	..	1	..	3	1	3	4	5	1
130. Dropsy	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	..	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..
131. Heart failure	13	....	..	..	..	..	..	..	..	2	1	2	4	1	3	..	..	5	8	....	10	2	1	4	7	2	..	2	2	..	1	..	1	1	1	3	2	..
132. Other ill-defined causes	6	1	..	1	..	..	..	..	..	..	..	1	1	..	1	1	..	3	3	....	3	2	1	3	3	..	..	1	..	..	..	..	1	..	1	1	2	..
133. Unknown causes	4	1	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	3	1	....	2	1	1	2	1	1	..	..	1	..	..	..	1	..	1	..	..	1
134. XV. STILL BIRTHS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	..	..	2	....	....	..	..	..	..	..	1	..	1	..	..	..	..

CAUSES OF DEATHS BY COUNTIES—PERTH (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																				
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1. GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	569	103	16	..	6	5	10	9	8	37	38	30	33	69	99	105	1	296	273	....	326	238	5	217	341	11	63	59	59	42	51	29	44	48	41	49	38	46
Group Total	19	7	1	..	1	2	1	..	1	3	..	1	2	..	..	1	..	5	14	....	16	3	...	15	4	....	4	2	1	..	2	2	1	1	4	..	1	1
1. Typhoid Fever	5	....	..	..	..	..	..	..	..	3	..	1	1	..	..	..	..	1	4	....	3	2	....	2	3	....	1	2	..	..	..	..	1	..	1	..	..	..
2. Malarial Fever	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
4. Measles	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
5. Scarlet Fever	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	1	..	..	1
6. Whooping Cough	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	2	..	..	..	1	..	..	..	..	..	..	..
7. Diphtheria and Croup	3	....	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	....	3	....	2	1	....	3	..	..	1	..	..	..	..	1	..	..	1	..	..	..
8. Influenza	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
9. Dysentery	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	..	..	..	..	1	..	1	1	..	..	..

(*B. Other General Diseases.*)

Group Total	92	2	..	..	2	..	2	1	4	16	12	12	7	15	13	6	..	42	50	....	63	28	1	34	57	1	11	10	11	11	6	2	4	9	5	7	7	9
12. Septicæmia	2	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	..	2	..	..	..	..	..	..	..	..
13. Tuberculosis of lungs	20	....	..	..	..	..	..	..	2	8	4	4	1	..	1	..	..	8	12	....	17	3	....	12	8	....	3	1	5	2	1	..	1	1	..	2	2	2
15. Tuberculous meningitis	3	....	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	1	..	..	..	1	..	1	..	..
20. Tuberculosis of other organs	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
21. General tuberculosis	8	....	..	..	..	..	..	1	4	1	..	..	1	..	..	1	..	4	4	....	6	2	....	3	5	....	..	1	..	..	1	..	..	2	2	..	2	..
25. Cancer of stomach and liver	9	....	..	..	..	..	..	..	..	..	..	1	1	4	2	1	..	5	4	....	2	7	....	....	9	....	1	2	..	1	..	..	1	..	..	..	..	4
27. Cancer of genital organs	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	....	1	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
28. Cancer of breast	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	..	1	1	..	..	..	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
30. Cancer of other unspecified organs	21	....	..	..	..	..	..	..	2	2	4	3	2	5	3	..	..	10	11	....	12	9	..	5	16	....	5	3	2	1	1	1	..	1	3	1	1	2
31. Tumors	2	....	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	....	2	....	2	....	....	....	1	1	..	..	..	1	..	1	..	..	..	..	..	..	..
32. Rheumatism	5	....	..	..	..	..	..	1	1	..	..	1	..	..	1	1	..	2	3	....	3	2	....	2	3	....	..	1	..	..	..	..	..	..	..	..	2	1
33. Diabetes	6	....	..	..	..	..	..	..	..	..	..	1	1	3	1	..	..	3	3	....	3	3	....	....	6	....	2	1	..	..	..	..	1	2	..	..	..	..
34. Anæmia, leukæmia	8	....	..	..	..	..	..	..	1	2	..	1	3	1	..	..	..	5	3	....	7	1	....	2	6	....	..	1	..	3	1	..	..	..	3	..	..
37. Other general diseases	3	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	..	1	1	1	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	71	14	5	..	1	1	2	..	..	3	1	..	5	13	15	8	..	38	33	....	40	31	....	26	44	1	8	2	13	5	6	3	6	5	4	7	8	4
39. Meningitis	10	1	5	..	..	1	1	..	..	1	..	..	..	1	..	..	..	5	5	....	9	1	....	9	1	....	..	..	..	..	2	..	2	1	2	..	2	1
41. Other diseases of spinal cord	3	....	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	2	1	....	3	....	....	....	3	....	1	..	1	..	..	..	..	..	..	..	..	..
42. Apoplexy	17	....	..	..	..	..	..	..	..	1	..	..	1	3	7	5	..	8	9	....	3	14	..	1	15	1	2	1	2	1	3	1	1	1	1	4	..	..
43. Softening of brain	3	....	..	..	..	..	..	..	..	..	1	..	..	1	1	..	..	1	2	..	1	2	....	....	3	....	1	..	..	..	..	..	..	..	..	..	1	..	1
44. Paralysis	16	....	..	..	..	..	..	..	..	..	..	..	3	5	5	3	..	7	9	....	5	11	....	1	15	....	1	1	4	2	..	1	2	1	1	1	1	1
48. Epilepsy	3	....	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	2	1	....	2	1	....	....	3	....	1	..	1	..	..	1	..	..	..	..	..	..
49. Convulsions	15	13	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	11	4	....	15	....	....	14	1	....	1	..	5	..	1	..	1	1	..	1	4	1
51. Other diseases of nervous system	4	....	..	..	1	..	..	..	..	2	..	..	1	..	..	..	..	2	2	....	2	2	....	1	3	....	1	..	..	1	..	..	..	1	..	..	1	..
III. DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	45	1	..	..	..	..	1	..	..	4	4	3	2	9	14	7	..	21	24	....	22	23	....	6	38	1	3	3	7	5	5	2	4	2	2	5	..	7
53. Endocarditis	8	....	..	..	..	..	1	..	..	..	1	..	..	2	4	..	..	3	5	....	4	4	....	2	6	....	..	1	1	..	..	..	1	..	..	..	..	5
54. Heart Disease	25	....	..	..	..	..	..	..	..	1	1	3	1	6	7	6	..	10	15	....	10	15	....	....	24	1	3	2	5	4	4	1	1	..	3	..	2
56. Diseases of arteries	6	....	..	..	..	..	..	..	..	1	1	..	1	1	1	1	..	3	3	....	3	3	....	1	5	....	..	..	..	..	1	..	1	2	1	1	..	..
57. Embolism and thrombosis	3	....	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	3	....	....	2	1	....	1	2	....	..	..	..	..	..	1	1	..	..	1	..	..
60. Other Diseases of circulatory system	3	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	1	....	3	....	....	2	1	....	..	..	1	1	..	..	..	..	1	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																					
Group Total	97	19	6	..	..	1	1	1	1	1	8	3	8	15	13	20	..	46	51	....	53	42	2	40	54	3	10	22	13	5	10	6	4	4	4	7	6	6
61. Diseases of larynx	2	....	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	1	..	..	1	..	..	..	..	..	..
63. Acute bronchitis	7	3	..	..	..	..	..	..	..	..	..	..	1	..	..	3	..	3	4	....	4	3	....	3	4	....	1	1	1	1	2	..	..	..	..	1	..	..
64. Chronic bronchitis	8	....	..	..	..	..	..	..	..	..	..	..	2	1	2	3	..	1	7	....	4	4	....	2	6	....	1	1	4	..	1	..	1	..	..	..	..	..
65. Broncho-pneumonia	17	6	1	..	..	..	..	..	..	..	..	..	3	2	5	..	..	8	9	....	9	7	1	9	7	1	1	8	1	2	2	..	..	..	..	1	1	1
66. Pneumonia	53	9	3	..	..	1	1	1	1	1	4	3	5	7	8	9	..	31	22	....	29	23	1	21	30	2	7	10	5	2	5	4	3	3	1	4	4	5
67. Pleurisy	2	....	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	2	....	1	1	....	2	....	....	..	..	1	..	..	..	..	..	..	..	1	..
68. Congestion of lungs	3	1	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	....	3	....	3	....	....	1	2	....	..	1	..	..	..	..	..	1	..	..	..	..
70. Asthma and emphysema	3	....	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	2	1	....	....	3	....	1	2	....	..	..	..	1	1	..	..	..	1	1	..	..
71. Hemorrhage of lungs	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
72. Other diseases of respiratory system, (phthisis ex.)	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..

PERTH.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	37	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	54	14	1	..	2	1	2	4	..	3	4	6	2	6	3	5	1	25	29	....	36	18	....	28	25	1	4	5	1	4	..	5	8	6	7	8	2	4
78. Other diseases of the stomach	8	6	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	4	4	....	6	2	....	7	1	....	1	1	..	..	..	..	..	..	2	3	..	1
80. Diarrhœa and enteritis (under 2 years)	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	....	5	..	....	5	..	....	..	..	1	..	..	..	1	..	2	1	..	..
81. Diarrhœa and enteritis (2 years and over)	10	....	..	..	1	..	1	1	..	..	1	..	1	1	1	3	..	6	4	....	5	5	....	3	7	....	..	..	..	..	..	3	3	2	2	..	..	..
82. Hernia	3	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	3	..	....	2	1	....	..	3	..	2	1	..	..	..	..	..	..	..	..	..	..
83. Obstruction of intestines	3	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	1	2	....	1	2	....	..	2	1	..	..	..	2	..	..	1	..	..	..	..	..
84. Other diseases of intestines	4	2	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	2	....	2	2	....	2	2	....	..	1	..	..	..	..	2	..	..	..	..	1
88. Biliary calculi	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	..	1	....	—	1	....	..	..	..	..	..	..	..	..	..	..	..	1
89. Other diseases of liver	3	1	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	1	2	....	2	1	....	2	1	....	1	..	..	..	..	..	..	..	1	1	..	..
90. Diseases of spleen	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	..	1	....	..	1	....	..	..	..	..	..	..	..	..	..	..	1	..
91. Peritonitis, non-puerperal	9	..	..	..	..	1	..	2	..	..	1	4	..	1	..	..	..	2	7	....	6	3	....	4	5	....	..	1	..	1	..	..	1	2	..	3	..	1
92. Appendicitis	7	..	..	..	..	..	1	1	..	3	..	2	..	..	..	..	..	4	3	....	7	..	....	5	2	....	..	1	..	1	..	2	..	2	..	..	1	..
VI. DISEASES OF GENITO URINARY SYSTEM.																																						
Group Total	19	1	2	..	..	..	..	..	..	2	..	1	3	1	6	3	..	11	8	....	12	7	....	5	13	1	2	4	1	2	2	2	3	..	1	..	1	1
95. Bright's disease	14	....	2	..	..	..	..	..	..	1	..	1	3	..	5	2	..	8	6	....	10	4	....	3	10	1	..	3	..	2	2	2	3	..	..	..	1	1
96. Other diseases of kidneys	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	1	..	..	..	..	..	..	..	..	..
98. Diseases of bladder	3	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	2	1	....	1	2	....	1	2	....	2	..	..	..	..	..	..	..	1	..	..	..
102. Ovarian tumor	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	..	1	....	..	1	....	..	1	..	..	..	..	..	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	3	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	3	....	3	..	....	..	3	....	1	..	..	..	1	..	..	..	..	..	..	1
107. Puerperal convulsions	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	1	..	....	..	2	....	1	..	..	..	..	..	..	..	..	..	..	..
108. Other causes incident to childbirth	2	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2	....	2	..	....	..	2	....	..	..	..	..	1	..	..	..	..	..	..	1
VIII. DISEASES OF SKIN.																																						
Group Total	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2	..	....	..	2	....	..	2	....	..	1	..	..	..	..	1	..	..	..	..	..
109. Gangrene	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2	..	....	..	2	....	..	2	....	..	1	..	..	..	..	1	..	..	..	..	..
IX.—DISEASES OF LOCOMOTOR SYSTEM.																																						
Group Total	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..
113. Diseases of the bones	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..
X. MALFORMATIONS. (No diseases in this class.)																																						
XI. EARLY INFANCY.																																						
Group Total	21	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	6	....	21	..	....	21	..	....	3	1	2	..	1	2	5	..	2	2	2	1
117. Premature birth	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	2	....	8	..	....	8	..	....	2	..	1	..	1	..	2	..	..	1	1	..
118. Congenital debility	13	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	1	....	13	..	....	13	..	....	1	1	1	..	..	2	3	..	2	1	1	2

	Total.	Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
119. XII. OLD AGE.																																				
Group Total	60	..	..	..	..	..	..	..	..	..	..	..	..	..	18	42	..	34	26	....	9	51	....	4	55	1	4	6	5	4	3	2	4	7	3	7	7	8
XIII.—VIOLENCE AND OTHER EXTERNAL CAUSES.																																				
Group Total	20	..	..	..	..	..	1	2	1	3	2	3	4	..	3	1	..	17	3	....	11	9	....	8	12	....	3	..	..	2	6	..	1	2	3	2	..	1
120. Suicides	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2	..	....	....	2	....	....	2	....	..	..	..	..	..	..	..	..	2	..	..	..
121. Fractures and dislocations	3	..	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	2	1	....	1	2	....	1	3	....	..	..	..	2	1	..	..	..	..	..	..	..
122. Burns and scalds	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
124. Drowning	2	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	2	..	....	1	1	....	1	1	....	..	..	..	..	1	..	..	1	..	..	..	..
125. Inhalation of poisonous gases	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
126. Other accidental poisonings	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	1	..	..	..	..	..	..	..
127. Other accidental traumatisms	10	..	..	..	..	..	1	1	1	2	2	2	..	1	..	..	..	10	..	....	7	3	....	4	6	....	2	..	..	..	3	..	1	1	1	2	..	..
XIV. ILL-DEFINED DISEASES																																				
Group Total	44	2	1	..	..	..	..	1	1	..	3	1	1	10	13	11	..	27	17	....	18	24	2	8	31	2	7	3	3	4	6	2	4	6	1	3	1	1
130. Dropsy	6	..	..	..	..	..	..	..	..	..	1	..	1	1	1	2	..	3	3	....	2	4	..	2	4	....	3	..	..	..	2	..	1	..	..	..	..	..
131. Heart failure	29	..	1	..	..	..	..	1	..	..	..	1	..	8	11	7	..	18	11	....	11	16	2	2	25	2	3	3	3	..	3	2	3	1	3	3	1	1
132. Other ill-defined causes	6	2	..	..	..	..	..	..	1	..	..	..	..	1	..	2	..	5	1	....	2	4	....	2	4	....	1	..	..	2	..	..	..	2	1	..	..	..
133. Unknown causes	3	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	1	2	....	3	..	....	2	1	..	..	..	..	2	1	..	..	..	..	..	..	..
134. XV. STILL BIRTHS.																																				
Group Total	21	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	9	....	21	..	..	21	..	..	3	..	2	..	2	1	..	5	2	1	3	2

CAUSES OF DEATHS BY COUNTIES—PETERBORO (including Municipalities of all classes), 1907.

Causes of Death.	Total.	Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES (*A. Epidemic Diseases.*)																																						
Grand Total	507	125	9	4	7	2	10	4	18	39	41	28	49	43	75	51	4	266	240	1	378	121	8	245	255	7	44	40	54	47	45	38	44	43	40	40	34	38
Group Total	21	8	..	..	3	..	1	..	1	2	2	1	2	..	3	1	.	16	8	....	18	5	....	17	7	....	3	3	1	2	..	1	1	7	4	..	1	1
1. Typhoid Fever	9	..	..	..	1	..	1	.	1	2	2	.	2	..	..	..	..	7	2	....	7	2	....	6	3	....	1	..	..	.	.	.	1	5	3	..	.	.
4. Measles	3	1	..	.	2	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	3	..	....	3	..	....	..	..	..	1	.	..	1	..	..	..	..	1
6. Whooping Cough	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	....	4	..	....	4	..	....	..	..	..	..	..	1	..	3	1	..	..	..
7. Diphtheria and Croup	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	..	..	1	..
8. Influenza	6	1	..	..	..	..	..	..	..	..	..	1	..	..	3	1	..	3	3	....	3	3	....	2	4	....	..	2	2	1	1	..	..	..	..	..	..	..
11. Other epidemic diseases	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	1	..	..	..	..	..	..	..	..	..	..

PETERBORO.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	82	1	..	.	..	1	1	..	6	20	13	10	11	6	10	2	1	33	49	....	67	15	....	25	56	1	14	3	5	7	12	10	7	5	4	6	5	4
12. Septicemia	2	....	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	....	2	....	....	....	2	....	..	..	..	..	1	..	1	..	..	..	..	..
13. Tuberculosis of lungs	24	....	..	..	..	..	.	2	8	6	1	5	1	..	..	..	1	6	18	....	20	4	....	9	15	....	5	..	1	2	1	6	2	1	..	2	2	2
15. Tuberculous meningitis	2	....	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	2	....	....	1	1	....	2	....	....	.	1	..	..	1	..	..	..	..	..	..	..
16. Abdominal tuberculosis	2	....	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	1	..	..	..	..	1	..	..	..
21. General Tuberculosis	16	....	..	..	..	..	..	..	2	8	2	1	2	..	1	..	..	6	10	....	16	....	....	6	9	1	4	1	..	1	2	2	3	1	..	1	1	..
24. Cancer of mouth	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
25. Cancer of stomach and liver	8	....	..	..	..	..	..	..	..	..	..	2	1	1	3	1	..	4	4	....	4	4	....	1	7	....	..	1	..	..	2	..	2	1	1	..	1
26. Cancer of intestines	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..
27. Cancer of genital organs	3	....	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	....	3	....	3	....	....	....	3	....	..	..	2	..	..	..	..	..	..	..	..	1
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	6	....	..	..	..	..	..	..	..	..	..	1	1	1	2	1	..	5	1	...	3	3	....	....	6	....	1	..	1	..	..	1	1	1	..	1	..	..
32. Rheumatism	3	....	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	1	2	....	2	1	....	1	2	....	..	..	..	..	1	1	..	..	1	..	..
33. Diabetes	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	2	....	....	2	....	....	1	1	....	..	..	..	..	1	.	..	1	.	..	..	..
34. Anæmia, leukæmia	8	1	..	..	..	..	..	..	..	1	1	2	..	2	1	..	..	2	6	....	7	1	....	1	7	....	2	..	1	1	1	..	..	..	1	..	2	..
35. Alcoholism	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
37. Other General diseases	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	....	2	....	2	....	....	1	1	....	2	..	..	..	..	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	41	9	..	1	1	1	..	..	2	2	4	2	7	4	5	2	1	23	18	....	34	6	1	26	14	1	3	2	4	4	1	4	4	3	3	4	6	3
39. Meningitis	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	..	1	1	..	..	..	..	..	..
42. Apoplexy	11	....	..	..	..	..	..	..	..	..	1	1	3	2	4	..	..	5	6	....	9	2	....	5	6	....	1	..	1	..	..	1	2	1	2	..	1	2
43. Softening of Brain	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
44. Paralysis	5	....	..	..	..	..	..	..	..	..	..	..	2	1	..	2	..	3	2	....	3	1	1	1	3	1	..	..	..	1	..	.	1	..	1	1	1	..
46. Other forms of mental disease	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
47. Other diseases of brain	2	....	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	2	....	....	2	....	....	2	....	....	1	..	..	..	..	..	..	..	..	..	1	..
48. Epilepsy	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	1	....	2	....	....	1	1	....	..	1	..	..	..	..	..	..	1	..	..	..
49. Convulsions	13	8	..	..	1	1	..	..	1	..	1	..	..	..	..	..	1	7	6	....	13	....	....	12	1	....	1	1	3	2	..	..	1	..	..	2	2	1
50. Tetanus	2	....	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	2	....	....	....	2	....	2	....	....	..	..	..	..	..	1	..	..	..	..	1	..
51. Other diseases of the nervous system	2	....	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	1	..	..	..	..	1	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	57	2	1	..	..	..	..	1	2	1	4	2	9	10	18	7	..	30	27	....	38	19	....	18	36	3	3	7	14	6	3	5	3	2	1	4	2	7
53. Endocarditis	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	2	....	....	1	1	....	1	....	1	..	..	1	..	..	..	..	..	..	1	..	..
54. Heart disease	44	1	1	..	..	..	..	1	1	1	3	1	7	10	12	6	..	21	23	....	29	15	....	14	28	2	3	4	12	5	3	4	1	..	1	3	2	6
55. Angina pectoris	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	....	....	2	....	....	....	2	....	..	..	..	..	..	..	1	..	..	..	..	1
56. Diseases of arteries	7	....	..	..	..	..	..	..	..	..	..	..	1	..	5	1	..	4	3	....	4	3	....	2	5	....	..	1	1	1	..	1	1	2	..	..	..	..
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	72	17	4	3	2	..	2	1	4	2	2	2	7	10	8	8	..	35	37	....	52	20	....	39	33	....	7	11	14	6	8	5	8	1	4	3	3	2
61. Diseases of larynx	2	....	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	2	....	....	2	....	....	1	1	..	..	..	1	..	..	..	..	..	..	1	..	..
62. Diseases of the thyroid body	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..

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PETERBORO.—*Concluded*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
119. XII. OLD AGE.																																						
Group Total	29	....	..	..	..	..	..	..	..	..	..	..	..	2	10	17	..	13	16	....	10	17	2	....	29	....	..	1	1	1	4	2	3	1	3	1	1	5
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	25	....	..	..	..	..	3	2	2	1	4	3	1	1	4	4	..	16	9	....	11	11	3	10	15	....	..	2	1	1	5	1	3	1	1	4	3	3
121. Fractures and dislocations	4	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	..	3	1	....	2	1	1	..	4	....	..	..	..	..	1	2	..	..	..	1	..	..
122. Burns and Scalds	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	..	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
124. Drowning	6	..	..	..	..	2	2	1	..	..	..	1	..	..	..	..	..	4	2	....	2	3	1	5	1	....	..	..	..	..	..	..	2	1	..	2	..	1
126. Other accidental poisonings	2	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	1	....	1	1	....	1	1	....	..	1	..	..	..	..	1	..	..	..	..	..
127. Other accidental traumatisms	12	..	..	..	..	..	..	..	1	1	3	..	1	1	2	3	..	8	4	....	5	6	1	3	9	....	..	1	1	..	2	1	..	..	1	1	3	2
XIV. ILL-DEFINED DISEASES.																																						
Group Total	37	5	..	..	..	..	..	..	..	3	2	1	6	6	9	4	1	21	16	....	24	13	....	10	26	1	4	3	5	6	1	..	2	7	..	5	2	2
130. Dropsy	5	..	..	..	..	..	..	..	..	..	1	..	1	1	2	..	..	4	1	....	4	1	....	....	5	....	1	..	..	..	..	..	..	3	..	..	..	..	1
131. Heart failure	21	..	..	..	..	..	..	..	..	3	1	..	5	2	5	4	1	14	7	....	11	10	..	4	16	1	2	1	3	5	1	..	2	3	3	..	..	..
132. Other ill-defined causes	8	5	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	2	6	....	7	1	....	5	3	....	..	..	1	..	..	..	..	..	1	..	3	2	..
133. Unknown causes	3	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	1	2	....	2	1	....	1	2	....	1	..	1	1	..	..	..	..	1	..	..	..	1
134. XV STILL BIRTHS.																																						
Group Total	31	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19	11	1	31	....	..	31	..	....	1	3	1	5	4	2	2	1	4	4	2	2

CAUSES OF DEATH BY COUNTIES.—PRESCOTT AND RUSSELL (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5.																Sex.			Nativity.			Social Con.			Months											
		0.1	1.	2.	3.	4.	5-9	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1. GENERAL DISEASES. (*A. Epidemic Diseases.*)																																						
Grand Total	811	309	28	26	14	10	29	19	20	51	34	31	30	69	77	62	2	419	384	8	748	39	14	501	269	43	83	53	86	87	67	70	51	89	59	60	48	58
Group Total	61	10	6	9	4	6	5	3	3	7	2	..	..	4	3	2	..	36	28	....	61	2	1	51	9	4	6	4	11	8	8	4	2	6	2	4	2	7
1. Typhoid Fever	14	1	1	..	..	1	..	1	3	3	2	..	..	1	..	1	..	7	7	....	12	1	1	8	4	2	1	1	..	1	1	..	..	3	1	..	2	4
4 Measles	11	2	3	5	1	..	..	..	..	..	..	..	..	..	..	..	..	4	7	....	11	....	....	11	....	....	..	..	..	1	5	2	..	..	..	..	..	..

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PRESCOTT AND RUSSELL—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	93	57	3	3	2	..	5	..	..	1	1	5	3	8	5	..	..	55	38	....	90	3	....	73	19	1	4	1	2	10	4	7	8	22	16	5	5	9
76. Ulcer of stomach	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
77. Gastritis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
78. Other diseases of the stomach	7	1	..	1	..	..	..	..	..	..	..	1	1	2	1	..	..	6	1	....	7	....	....	3	4	....	1	..	..	..	..	..	1	1	1	1	1	1
80. Diarrhœa and enteritis (under 2 years)	56	53	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33	23	....	54	2	....	56	....	....	1	1	1	8	3	5	5	14	10	3	2	3
81. Diarrhœa and enteritis (2 years and over)	12	....	..	2	2	..	1	..	..	1	..	1	..	2	3	..	..	6	6	....	12	....	....	4	7	1	..	..	..	..	..	..	1	5	5	..	..	1
84. Other diseases of intestines	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
88. Biliary calculi	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	1	..	..	..	..	..	1	..
89. Other diseases of liver	6	....	..	..	..	..	..	..	..	1	1	..	3	..	..	..	..	2	3	....	4	1	....	1	4	....	..	..	..	1	..	..	1	1	..	..	1	1
91. Peritonitis, non-puerperal	7	3	..	..	..	3	..	..	..	..	..	..	..	1	..	..	..	4	3	....	7	....	....	6	1	....	2	..	1	..	..	1	..	1	..	..	..	2
92. Appendicitis	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	23	2	..	1	..	1	2	..	..	..	1	2	1	5	7	1	..	14	9	....	21	1	1	7	13	3	1	3	1	2	..	2	2	..	3	4	3	2
94. Acute nephritis	7	2	..	1	..	1	..	..	..	..	1	1	..	..	1	..	..	2	5	....	6	....	1	4	2	1	..	1	1	1	..	..	1	..	2	..	1	..
95. Bright's disease	9	....	..	..	..	..	1	..	..	..	..	1	1	3	3	..	..	6	3	....	9	....	....	2	6	1	1	1	..	1	..	2	..	..	..	1	1	2
96. Other diseases of kidneys	3	....	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	2	1	....	3	....	....	1	1	1	..	..	..	..	..	..	..	..	1	1	1	..
97. Calculi of urinary tract	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
98. Diseases of bladder	3	....	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	3	....	...	2	1	....	....	3	....	..	1	..	..	..	..	1	..	..	1	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	13	....	..	..	..	..	..	..	1	4	5	3	..	..	..	..	..	....	13	....	13	....	....	....	12	1	2	2	..	3	1	1	..	3	..	..	..	1
108. Other causes incident to childbirth	13	....	..	..	..	..	..	..	1	4	5	3	..	..	..	..	..	....	13	....	13	....	....	....	12	1	2	2	..	3	1	1	..	3	..	..	..	1
VIII. DISEASES OF SKIN.																																						
Group Total	5	1	..	..	..	..	..	..	..	1	..	..	1	..	..	2	..	3	2	....	5	....	....	2	2	1	1	1	..	..	..	..	1	1	..	..	1	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
112. Other diseases of skin	4	1	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	3	1	....	4	....	....	2	1	1	1	1	..	..	..	..	1	1	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	103	103	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	59	44	....	103	....	....	103	....	....	11	10	10	6	12	6	5	13	9	6	6	9
117. Premature birth	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	2	....	8	....	....	8	....	....	..	1	3	..	..	1	..	1	..	1	1	..
118. Congenital debility	95	95	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	53	42	....	95	....	....	95	....	....	11	9	7	6	12	5	5	12	9	5	5	9
119. XII. OLD AGE.																																						
Group Total	56	....	..	..	..	..	..	..	..	..	..	..	..	4	12	40	..	29	27	....	43	11	2	7	47	2	6	6	6	9	4	4	1	4	4	10	..	2

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PRINCE EDWARD.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	37	....	..	..	..	.	1	1	..	5	7	3	4	7	7	1	1	14	23	....	32	5	....	7	30	....	5	8	1	6	3	2	2	..	4	2	2	2
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
13. Tuberculosis of lungs	7	....	..	..	..	..	..	..	..	4	2	..	1	..	..	..	..	5	2	....	6	1	....	3	4	....	1	1	..	..	..	1	..	..	2	..	1	1
21. General Tuberculosis	6	....	..	..	..	..	.	..	..	1	2	1	1	..	..	..	1	1	5	....	6	....	....	....	6	...	2	2	..	1	1	..	..	..	..	..	..	..
25. Cancer of stomach and liver	4	..	..	..	..	..	..	..	..	..	..	..	1	2	1	..	..	3	1	....	4	...	....	1	3	....	..	..	..	..	..	..	2	..	1	..	..	1
26. Cancer of intestines	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
27. Cancer of genital organs	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	2	..	..	..	..	..	..	..
28. Cancer of breast	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	..	..	..	..	1	1	..
30. Cancer of other unspecified organs	7	....	..	..	..	..	..	..	..	..	..	1	..	2	4	..	..	1	6	....	6	1	....	....	7	....	1	2	1	..	1	1	..	..	1	..	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
33. Diabetes	3	....	..	..	..	..	1	1	..	..	1	..	..	..	..	..	..	1	2	....	3	....	....	2	1	....	..	1	..	2	..	..	..	..	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	....	2	....	2	....	....	....	2	....	1	1	..	..	..	..	..	..	..	..	..	..
37. Other General diseases	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
II.—DISEASES OF NERVOUS SYSTEM.																																						
Group Total	39	7	3	..	..	1	..	..	..	..	..	..	1	7	11	4	5	..	22	17	....	37	2	....	15	24	...	2	4	3	4	4	3	7	4	1	3	1	3
38. Encephalitis	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
39. Meningitis	2	....	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	2	....	2	....	....	1	1	....	..	1	..	..	..	..	..	..	1	..	..	..
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
42. Apoplexy	12	2	1	..	..	..	..	..	..	..	..	..	2	4	..	3	..	8	4	...	11	1	....	6	6	....	1	1	1	1	1	2	1	1	..	1	1	1
44. Paralysis	14	....	..	..	..	..	..	..	..	..	..	1	3	4	4	2	..	9	5	....	13	1	....	....	14	....	1	1	2	1	2	1	3	2	..	1	..	..
48. Epilepsy	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
49. Convulsions	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	4	....	5	....	....	5	....	....	..	..	..	2	..	..	1	1	..	..	..	1
51. Other diseases of nervous system	3	....	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	2	....	3	....	....	1	2	....	..	..	..	..	..	..	2	..	..	1	..	..
III.—DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	29	1	..	..	..	..	..	..	..	1	2	1	2	6	11	5	..	14	15	....	23	5	1	4	25	....	4	..	5	..	4	1	4	3	3	4	1	..
53. Endocarditis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
54. Heart disease	26	1	..	..	..	..	..	..	..	..	1	1	2	5	11	5	..	12	14	....	20	5	1	3	23	....	4	.	5	..	4	1	3	2	3	3	1	..
56. Diseases of arteries	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
60. Other diseases of circulatory system	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
IV.—DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	28	2	2	..	..	..	..	..	1	3	1	1	5	7	4	2	..	17	11	....	24	4	....	10	18	....	2	6	8	4	..	3	1	..	2	..	..	2
63. Acute bronchitis	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	....	....	1	1	....	1	1	....	..	..	..	1	..	..	..	..	..	..	..	1
64. Chronic bronchitis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
65. Broncho-pneumonia	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	..	..	..	..
66. Pneumonia	20	....	1	..	..	..	..	..	1	2	1	1	4	6	2	2	..	11	9	....	17	3	....	6	14	....	2	5	5	3	2	..	1	..	1	..	..	1
67. Pleurisy	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
68. Congestion of lungs	2	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	....	....	2	....	....	....	2	....	..	1	1	..	..	..	..	..	..	..	..	..

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CAUSES OF DEATHS BY COUNTIES—RAINY RIVER (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(A. Epidemic Diseases.)																																					
Grand Total	383	65	14	4	3	5	8	9	16	87	62	31	17	14	9	11	28	295	88	....	163	182	38	205	96	82	33	20	26	22	29	43	29	37	33	24	44	43
Group Total	61	5	3	1	2	3	2	1	6	19	12	4	..	1	1	..	1	44	17	....	25	32	4	38	16	7	7	1	3	1	4	3	3	9	10	8	3	9
1. Typhoid Fever	44	....	..	1	..	1	1	1	5	16	12	4	..	1	1	..	1	34	10	....	11	30	3	22	15	7	5	..	3	1	3	1	..	5	8	8	3	7
4. Measles	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	1	..	..	1	..	..	..
5. Scarlet Fever	2	....	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	..	..	..	1	..	..	..	..	..
6. Whooping Cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	1
7. Diphtheria and Croup	7	1	1	..	1	1	..	..	..	3	..	..	..	..	..	..	..	5	2	....	5	1	1	7	....	....	1	1	..	..	1	..	3	..	1	..	..	..
8. Influenza	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
9. Dysentery	4	2	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	3	....	3	1	....	4	....	....	..	..	..	..	..	..	4	..	..	..	..	..
(B. Other General Diseases.)																																					
Group Total	29	1	..	..	..	..	1	1	3	6	7	7	1	1	..	..	1	18	11	....	12	14	3	11	10	8	3	1	2	1	2	5	3	4	3	..	2	3
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..
13. Tuberculosis of lungs	2	....	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	1	....	1	....	1	....	1	1	..	..	..	..	..	1	..	..	..	..	1	..
15. Tuberculous meningitis	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
21. General tuberculosis	17	1	..	..	..	..	1	..	3	4	4	4	..	..	..	..	..	10	7	....	7	10	....	8	4	5	2	1	1	1	..	4	2	2	3	..	..	1
25. Cancer of stomach and liver	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
33. Diabetes	2	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	1	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
35. Alcoholism	3	....	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	2	1	....	....	1	2	1	....	2	1	..	..	..	1	..	..	..	..	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	26	7	3	1	1	1	..	2	2	1	1	2	2	1	1	..	1	19	7	....	19	6	1	17	8	1	1	4	..	2	2	2	3	6	1	1	3*	1
38. Encephalitis	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
39. Meningitis	6	....	..	1	..	..	..	2	1	..	..	1	..	..	..	..	1	4	2	....	3	2	1	4	1	1	..	1	..	..	..	2	1	1	..	..	..	1
42. Apoplexy	4	....	..	..	..	..	..	..	..	1	..	1	2	..	..	..	..	2	2	....	2	2	....	....	4	....	....	..	..	..	..	1	2	..	..	1	..	..
44. Paralysis	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	....	2	....	1	1	....	....	2	....	....	..	..	..	..	..	1	1	..	..	..	..
49. Convulsions	13	7	3	..	1	1	..	..	..	..	1	..	..	..	..	..	..	12	1	....	12	1	....	12	1	....	1	2	..	2	2	..	1	2	..	1	2	..

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RAINY RIVER.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
X. MALFORMATIONS.																																						
Group Total	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
116. Congenital malformations (still-births excluded)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	21	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	7	....	21	....	....	21	....	....	..	1	2	1	2	2	1	2	1	3	2	4
117. Premature birth	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	....	4	....	....	4	....	....	..	..	..	..	..	1	..	..	..	2	1	..
118. Congenital debility	17	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	6	....	17	....	....	17	....	....	..	1	2	1	2	1	1	2	1	1	1	4
119. XII. OLD AGE.																																						
Group Total	10	....	..	..	..	..	..	..	..	..	..	..	..	..	..	10	..	3	7	....	5	....	....	....	10	....	3	..	1	1	2	..	..	..	..	..	..	3
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	121	....	..	1	..	1	2	1	5	41	34	12	5	1	..	..	18	119	2	....	16	90	15	47	23	51	9	6	8	7	10	18	8	8	4	7	23	13
121. Fractures and dislocations	6	....	..	..	..	..	..	..	1	1	1	1	1	..	..	..	1	6	....	....	1	3	2	1	2	3	1	..	..	1	1	..	..	..	1	..	1	1
122. Burns and scalds	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
123. Physical phenomena	5	....	..	..	..	..	1	..	..	..	1	1	1	..	..	..	1	5	....	....	....	4	1	2	1	2	..	..	..	1	1	..	..	..	..	1	1	1
124. Drowning	11	....	..	..	..	..	1	1	2	4	2	..	..	..	..	..	1	10	1	....	4	6	1	7	2	2	..	..	..	1	..	2	1	2	1	1	2	1
126. Other accidental poisonings	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	....	....	1	1	....	2	....	....	..	..	..	..	1	..	..	..	..	..	..	1
127. Other accidental traumatisms	95	....	..	..	..	..	..	..	2	36	29	9	3	1	..	..	15	95	....	....	8	76	11	33	18	44	8	6	8	4	7	16	6	6	2	5	18	9
129. Homicide	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	22	8	1	..	..	..	..	2	..	2	2	1	2	..	1	..	3	15	7	....	11	6	5	12	4	6	1	4	3	..	1	1	1	1	2	2	6	..
130. Dropsy	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	.
131. Heart failure	4	....	..	..	..	..	..	..	..	1	1	..	1	..	1	..	..	4	....	....	2	2	....	1	2	1	..	..	..	..	1	1	..	..	2	..	..	..
132. Other ill-defined causes	7	5	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	4	....	4	3	....	6	....	1	1	1	1	..	..	..	..	..	..	2	2	..
133. Unknown causes	10	3	..	..	..	..	..	2	..	..	1	1	..	..	..	..	3	7	3	....	5	....	5	5	1	4	..	3	2	..	..	..	1	1	..	..	3	..
134. XV. STILL BIRTHS.																																						
Group Total	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	....	....	5	....	....	5	...	....	2	..	1	..	1	1	..	..	..	..	..	..

CAUSES OF DEATHS BY COUNTIES—RENFREW (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1.—GENERAL DISEASES.																																					
(A. *Epidemic Diseases*).																																					
Grand Total	644	187	31	8	8	5	19	13	28	52	24	30	39	50	83	67	..	328	312	4	496	144	4	349	279	16	62	80	58	54	65	63	36	56	52	40	37	41
Group Total	62	7	7	2	2	3	12	4	6	5	1	2	2	1	5	3	..	27	35	....	54	8	....	46	15	1	7	16	6	4	5	6	2	1	2	1	6	6
1. Typhoid fever	16	....	1	..	..	..	2	2	4	3	..	1	2	1	..	..	..	7	9	....	13	3	....	10	6	....	2	7	..	..	..	2	..	..	2	..	1	2
2. Malarial fever	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
4. Measles	5	1	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	5	....	5	....	....	5	....	....	1	..	2	1	..	..	..	..	..	..	1	..
5. Scarlet fever	4	....	2	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	2	....	4	....	....	4	....	....	..	..	..	..	..	1	1	..	..	..	..	2
7. Diphtheria and croup	20	1	1	2	2	1	9	2	2	..	..	..	..	..	..	..	..	11	9	....	19	1	....	20	..	....	3	2	2	..	3	2	1	1	..	1	4	1
8. Influenza	16	5	..	..	..	1	..	..	..	..	1	1	..	..	5	3	..	7	9	....	12	4	....	7	8	1	1	7	2	3	2	..	..	..	..	..	..	1
(B. *Other General Diseases*).																																					
Group Total	63	1	1	1	1	..	..	1	10	16	4	6	6	9	6	1	..	30	33	....	48	15	....	27	36	..	5	12	6	9	6	3	3	5	2	4	4	4
12. Septicæmia	5	....	..	..	..	..	..	..	1	1	1	1	..	..	..	1	..	2	3	....	3	2	....	2	3	....	..	2	..	2	..	..	1	..	..	..	..	..
13. Tuberculosis of lungs	6	....	..	..	..	..	..	..	2	3	..	1	..	..	..	..	..	4	2	....	6	....	....	4	2	....	2	1	..	1	..	..	..	..	..	..	1	1
15. Tuberculous meningitis	3	....	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	1	..	1	1	..	..	..	..	..	..	..
16. Abdominal tuberculosis	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
21. General tuberculosis	27	....	..	..	..	..	..	..	3	11	3	3	3	2	2	..	..	11	16	....	24	3	...	11	16	....	3	4	5	3	2	2	..	2	2	2	1	1
25. Cancer of stomach and liver	4	....	..	..	..	..	..	..	..	..	..	1	1	2	..	..	..	2	2	....	1	3	....	....	4	....	..	..	..	..	..	1	..	1	..	1	1	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	5	....	..	..	..	..	..	..	..	..	..	..	..	4	..	1	..	2	3	..	1	4	....	....	5	....	..	1	..	..	1	..	..	2	..	..	1	..
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	...	1	....	..	1	..	..	..	..	..	..	..	..	..	..
32. Rheumatism	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	1	2	....	2	1	....	....	3	....	..	1	..	1	..	..	1	..	..	..	..	..
33. Diabetes	2	....	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	..	1	..	1
34. Anæmia, leukæmia	2	....	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	1	..	..	1	..	..	..	..	..	..	..
35. Alcoholism	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
37. Other general diseases	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	1	..	..	..	..	..	..	..	..	1

RENFREW.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	60	8	6	..	3	1	..	3	1	2	2	4	5	8	14	3	..	28	32	....	44	16	....	24	35	1	3	5	10	4	5	5	3	5	8	5	4	3
38. Encephalitis	2	....	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	1	..	..	..	..	..	..	..	1
39. Meningitis	8	1	1	..	2	1	..	2	1	..	..	..	..	..	..	..	..	4	4	....	7	1	....	8	....	....	..	1	1	..	..	..	..	2	2	1	..	1
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
42. Apoplexy	8	....	..	..	..	..	..	..	..	..	2	2	2	2	..	..	..	4	4	....	5	3	....	....	7	1	..	2	2	1	1	..	..	1	..	1	..	..
43. Softening of brain	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
44. Paralysis	21	....	..	..	..	..	1	..	1	1	2	3	3	8	2	..	..	9	12	....	12	9	....	2	19	....	2	2	4	..	..	3	2	2	3	..	2	1
46. Other forms of mental disease	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
47. Other diseases of brain	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
49. Convulsions	11	7	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	7	....	11	....	....	11	....	....	1	..	1	2	2	1	..	..	1	2	1	..
51. Other diseases of nervous system	6	....	1	..	..	..	..	..	..	..	1	..	..	1	3	..	..	4	2	....	4	2	....	2	4	....	..	..	2	..	1	1	..	..	1	..	1	..
III. DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	30	2	.	..	..	..	..	..	1	1	1	3	3	3	14	2	..	16	14	....	18	12	....	4	23	2	2	3	2	1	6	5	2	3	3	2	..	1
53. Endocarditis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
54. Heart disease	28	1	..	..	..	..	..	..	1	1	1	3	3	3	13	2	..	16	12	....	17	11	....	4	22	2	2	3	1	1	6	5	2	2	3	2	..	1
60. Other diseases of circulatory system	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	..	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																					
Group Total	72	15	4	3	1	..	1	1	1	8	2	3	10	7	8	8	..	34	38	....	61	10	1	35	35	2	9	13	13	4	8	5	3	6	..	3	2	6
62. Diseases of the thyroid body	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
63. Acute bronchitis	13	7	1	1	..	..	..	..	..	1	..	..	..	..	1	2	..	6	7	....	11	2	....	9	4	....	3	1	3	1	..	2	..	2	..	..	1	..
64. Chronic bronchitis	5	....	..	..	..	..	..	..	..	..	..	..	..	1	3	..	1	..	1	4	4	1	....	1	3	1	1	3	..	1	..	..	..	..	..	..	..	..
66. Pneumonia	47	8	3	2	1	.	1	1	1	6	2	2	6	2	7	5	..	24	23	....	40	6	1	24	22	1	5	9	9	2	8	2	2	3	..	1	1	5
67. Pleurisy	3	....	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	2	....	2	1	....	....	3	....	..	..	1	..	..	..	..	..	..	1	..	1
70. Asthma and emphysema	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	..	1	..	1	..	..	..	..
71. Hemorrhage of lungs	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	.	..	....	1	....	1	....	...	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																					
Group Total	63	32	7	1	..	1	1	2	1	3	1	4	2	5	1	2	..	32	31	....	56	7	....	47	15	1	1	3	3	4	3	3	3	17	12	7	3	4
75. Other diseases of pharynx	1	1	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
77. Gastritis	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	..	..	..	..	..	2	..	..	..
78. Other diseases of the stomach	10	4	..	..	..	1	..	..	..	..	1	1	..	1	1	1	..	5	5	....	7	3	....	5	5	....	..	..	..	1	..	1	2	..	1	2	2	1
79. Dentition	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
80. Diarrhœa and enteritis, (under 2 years)	31	26	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18	13	....	31	....	....	31	....	....	..	1	1	1	1	.	1	15	5	4	.	2
81. Diarrhœa and enteritis, (2 years and over)	4	....	..	1	..	..	..	..	..	1	..	..	..	1	..	1	..	....	4	....	2	2	....	1	3	....	..	..	2	1	..	..	..	..	..	..	1	..
82 Hernia	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
83. Obstruction of intestines	3	....	..	..	..	..	..	..	..	1	.	1	1	..	..	..	..	2	1	....	2	1	...	1	1	1	..	1	..	..	..	..	..	1	..	..	..	1
84. Other diseases of intestines	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
91. Peritonitis, non-puerperal	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
92. Appendicitis	8	....	1	..	..	..	1	2	1	1	..	2	..	..	..	..	..	4	4	....	8	....	....	6	2	....	..	1	..	1	2	..	..	1	2	1	..	..

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RENFREW.—*Concluded.*

Number of column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	53	6	3	..	..	..	..	1	2	2	4	3	7	6	11	8	..	24	29	....	34	18	1	17	36	....	4	1	1	6	10	9	4	2	7	1	1	7
130. Dropsy	6	....	..	..	..	..	..	..	..	..	..	1	..	2	1	2	..	4	2	....	2	4	....	....	6	....	..	1	..	1	1	..	2	..	..	..	1	..
131. Heart failure	29	....	..	..	..	..	..	..	1	..	3	..	5	4	10	6	..	16	13	....	17	11	1	6	23	....	2	..	..	3	9	6	1	1	3	1	..	3
132. Other ill-defined causes	15	6	2	..	..	..	..	1	1	1	1	2	1	..	..	..	..	3	12	....	14	1	....	10	5	....	2	..	..	2	..	3	1	1	3	..	..	3
133. Unknown causes	3	....	1	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	2	....	1	2	....	1	2	....	..	..	1	..	..	..	..	..	1	..	..	1
134. XV. STILL BIRTHS.																																						
Group Total	49	49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	24	4	49	....	....	49	....	....	4	5	3	6	2	6	4	4	3	8	2	2

CAUSES OF DEATHS BY COUNTIES—SIMCOE (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																																
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	1,113	281	27	15	10	5	17	19	28	89	62	69	76	132	166	111	6	602	507	4	790	304	19	544	554	15	107	115	108	95	107	81	76	76	88	85	89	86
Group Total	73	22	7	4	3	2	4	6	3	12	3	2	..	1	1	3	..	36	37	....	65	7	1	60	13	....	7	13	4	7	10	4	7	6	1	3	7	4
1. Typhoid Fever	17	....	..	..	..	..	..	1	3	9	3	1	..	..	..	..	..	8	9	....	12	4	1	11	6	...	3	3	1	2	2	1	3	..	1	1	..
2. Malarial Fever	2	....	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	1	..	1	..	..	..	..
4. Measles	8	3	2	1	..	..	1	1	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	..	3	..	2	1	2	..	..	..	..	..	..
5. Scarlet Fever	2	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	1	..	..	..	..	..	1	..
6. Whooping Cough	20	14	4	1	..	1	..	..	..	..	..	..	..	..	..	..	..	10	10	....	20	....	....	20	....	....	2	..	1	2	4	..	2	5	..	2	1	1
7. Diphtheria and Croup	12	2	1	2	2	..	2	2	..	1	..	..	..	..	..	..	..	7	5	....	11	1	....	12	....	....	2	2	..	1	1	..	..	..	1	..	3	2
8. Influenza	10	2	..	..	..	..	1	1	..	1	..	1	..	..	1	3	..	5	5	....	8	2	....	4	6	....	..	4	2	..	1	..	1	..	..	..	1	1
9. Dysentery	2	....	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	1	1	....	2	....	....	1	1	....	..	1	..	..	..	..	1	..	..	..	..	..

(*B. Other General Diseases.*)

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SIMCOE.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	126	28	4	3	5	..	2	.	2	6	3	7	6	28	20	11	1	71	55	....	82	44	....	58	68	....	20	21	16	8	14	4	2	2	3	11	15	9
61. Diseases of larynx	2	....	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	1	..	..	..	..	..	1	..	..	..
62. Diseases of the thyroid body	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	....	1	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
63. Acute bronchitis	19	10	1	2	3	..	..	..	..	..	..	1	..	..	1	1	..	10	9	....	18	1	....	17	2	....	4	1	5	2	3	..	..	..	2	2	..
64. Chronic bronchitis	11	....	..	..	..	..	..	..	..	..	..	..	..	5	5	1	..	7	4	....	3	8	....	2	9	....	1	1	..	1	1	1	1	..	..	1	1	3
65. Broncho-pneumonia	9	5	2	..	1	..	..	..	..	..	1	..	..	..	..	..	..	6	3	....	9	....	....	9	....	....	1	3	1	1	..	1	..	..	..	1	1	..
66. Pneumonia	70	12	1	1	..	..	1	..	1	6	1	4	5	17	12	8	1	38	32	....	44	26	...	25	45	....	14	14	8	3	6	2	1	..	1	6	9	6
67. Pleurisy	2	....	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	1	....	....	2	....	....	2	....	..	1	..	..	..	..	..	1	..	..	..	..
68. Congestion of lungs	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	....	....	....	2	....	....	2	....	..	..	1	..	..	..	..	..	..	..	1	..
70. Asthma and emphysema	3	....	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	1	2	....	1	2	....	....	3	....	..	..	..	1	..	..	..	..	..	1	1	..
71. Hemorrhage of the lungs	3	....	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	2	1	....	1	2	....	2	1	....	..	1	..	..	1	..	..	1	..	..	..	..
72. Other diseases of respiratory system (phthisis excep.)	4	1	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	4	....	....	3	1	....	1	3	....	..	..	..	..	2	..	.	1	1	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																					
Group Total	77	29	5	1	..	1	3	1	2	5	1	4	2	9	12	2	..	51	26	....	62	11	4	45	31	1	5	2	4	2	9	3	5	6	13	11	11	6
74. Tonsilitis	3	....	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	3	....	....	3	....	....	1	2	....	..	..	..	..	2	..	..	1	..	..	.	..
76. Ulcer of stomach	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	1	....	1	....	2	....	..	..	..	..	..	1	..	1	..	..	..	..
77. Gastritis	4	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	2	....	3	1	....	2	2	....	..	2	..	..	1	..	..	..	..	..	1	..
78. Other Diseases of the Stomach	16	7	2	..	..	..	..	..	..	..	..	1	..	3	2	1	..	11	5	...	13	3	....	10	6	....	3	..	..	1	1	..	4	2	1	3
79. Dentition	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	2	..	..	..	..	..	..	..	..
80. Diarrhœa and enteritis (under 2 years)	19	16	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	5	....	19	....	....	19	....	....	1	..	..	..	..	..	1	4	6	5	1	1
81. Diarrhœa and enteritis (2 years and over)	3	....	..	..	..	..	1	..	..	..	..	..	..	1	1	..	..	2	1	....	2	1	....	1	2	....	..	..	2	..	..	..	..	..	..	1	..	..
83. Obstruction of intestines	5	2	..	..	..	..	1	..	..	..	..	..	..	1	1	..	..	3	2	....	4	1	....	3	2	....	..	..	1	..	1	..	1	..	..	1	1	..
84. Other diseases of intestines	4	....	..	..	..	..	..	1	..	..	..	2	..	..	..	1	..	4	....	....	3	....	1	3	....	....	..	..	..	..	1	..	..	1	1	1	..
85. Acute yellow atrophy of liver	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
87. Cirrhosis of liver	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	....	....	1	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
89. Other diseases of liver	5	....	..	..	..	..	..	..	..	1	..	..	..	2	2	..	..	3	2	....	1	3	1	..	4	1	..	..	..	..	2	..	1	..	..	..	2	..
91. Peritonitis (non puerperal)	7	....	..	1	..	..	..	..	1	1	1	1	1	..	1	..	..	1	6	....	5	2	....	2	5	....	1	..	..	..	1	..	..	2	..	1	2
92. Appendicitis	5	....	..	..	..	..	1	1	..	2	..	..	..	..	1	..	..	4	1	....	5	....	....	4	1	....	..	..	1	..	1	..	..	..	1	2	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																					
Group Total	49	3	..	..	1	..	..	2	1	2	8	5	5	11	9	2	..	28	21	....	34	14	1	12	34	3	8	2	3	3	4	5	4	3	5	6	4	2
91. Acute nephritis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
95. Bright's disease	34	2	..	..	1	..	..	2	1	2	6	5	4	7	4	..	..	15	19	....	25	9	....	9	24	1	6	1	2	3	2	2	4	3	2	4	3	2
96. Other diseases of kidneys	7	1	..	..	..	..	..	..	..	..	1	..	1	1	3	..	..	7	....	....	5	2	....	2	3	2	1	1	1	..	..	..	..	..	3	1	..	..
97. Calculi of urinary tract	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
98. Diseases of bladder	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
99. Diseases of male genital organs (non-venereal)	4	....	..	..	..	..	..	..	..	..	..	..	..	1	1	2	..	4	....	....	1	2	1	1	3	....	..	..	..	..	2	1	..	..	..	1	..	..
104. Diseases of female genital organs (non-venereal)	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..

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CAUSES OF DEATHS BY COUNTIES—STORMONT, DUNDAS AND GLENGARRY (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	950	213	25	20	12	6	11	14	25	64	63	44	50	107	147	146	3	495	453	2	835	108	7	447	490	13	86	94	92	97	79	78	64	74	66	69	75	76
Group Total	39	8	..	5	1	2	2	2	..	5	2	3	1	2	1	5	..	20	19	....	36	3	....	26	12	1	6	8	6	4	2	3	3	..	1	1	1	4
1. Typhoid Fever	12	....	..	..	..	..	..	1	..	5	2	3	..	1	..	..	..	8	4	....	9	3	....	5	6	1	1	3	1	1	1	..	2	..	..	..	1	2
4. Measles	4	1	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	..	..	2	1	1	..	..	..	..	..	..
6. Whooping Cough	4	3	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	3	..	..	..	..	..	..	..	..	..	..	..	1
7. Diphtheria and Croup	9	3	..	2	1	2	1	..	..	..	..	..	..	..	..	..	..	5	4	....	9	....	....	9	....	....	1	3	1	1	..	..	1	..	..	1	..	1
8. Influenza	8	1	..	1	..	..	..	..	..	..	..	1	..	..	1	4	..	4	4	....	8	....	....	3	5	....	1	2	4	..	..	1	..	..	..	..	..	..
9. Dysentery	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	..	1	..	1	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	188	1	3	3	..	1	2	3	10	12	26	17	17	27	24	10	2	88	100	....	167	20	1	76	108	4	13	14	15	17	20	15	14	15	10	20	18	17
12. Septicæmia	9	....	..	..	..	..	..	2	..	2	..	..	2	2	..	..	1	3	6	....	8	1	....	3	6	....	..	..	..	5	1	1	1	..	..	1	..	..
13. Tuberculosis of lungs	11	....	..	..	..	..	..	..	1	4	4	1	1	..	..	..	..	4	7	....	9	2	....	5	6	....	1	2	1	..	1	2	1	..	1	..	1	1
15. Tuberculous meningitis	5	....	1	2	..	1	..	..	..	1	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	..	1	1	2	..	..	..	..	..	1	..	..
16. Abdominal tuberculosis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
20. Tuberculosis of other organs	8	..	1	..	..	..	..	..	1	3	2	..	..	1	..	..	..	5	3	....	8	....	....	6	1	1	1	..	1	2	1	..	..	..	..	..	1	2
21. General Tuberculosis	74	1	..	1	..	..	..	7	29	15	9	1	6	5	..	..	..	36	38	....	73	1	....	39	34	1	5	7	8	2	10	3	7	4	3	11	8	6
22. Scrofula	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..
24. Cancer of mouth	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
25. Cancer of the stomach and liver	16	....	..	..	..	..	..	..	..	1	1	1	3	5	3	2	..	13	3	....	13	3	....	1	15	....	1	1	1	1	1	4	..	1	1	2	3	..
26. Cancer of intestines	2	....	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	....	2	....	....	2	....	....	2	....	..	..	..	..	..	..	..	..	2	..	..	..
27. Cancer of genital organs	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
29. Cancer of skin	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2	....	....	1	1	....	....	2	....	1	1	..	..	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	19	....	..	..	..	..	..	..	..	..	1	3	4	3	1	4	..	5	14	....	17	2	....	5	13	1	..	..	..	1	1	3	1	4	..	2	2	5
31. Tumors	3	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	1	2	....	3	....	....	1	2	....	..	..	..	1	1	..	..	1	..	..	..	..
32. Rheumatism	7	..	..	..	..	..	..	..	..	..	2	..	1	1	3	..	..	4	3	....	4	2	1	....	7	....	..	2	..	..	..	1	..	1	..	1	1	1
33. Diabetes	7	..	..	..	..	..	..	..	..	1	..	1	..	4	1	..	..	4	3	....	7	....	....	2	5	....	2	..	1	..	..	1	..	1	2	..	..	..
34. Anæmia, leukæmia	20	....	1	..	..	..	1	..	1	..	1	2	3	4	3	1	1	6	14	....	15	5	....	6	13	1	2	..	2	3	3	1	2	3	2	1	..	1
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	88	11	5	3	..	1	3	1	1	2	4	5	3	18	20	11	..	52	36	....	80	7	1	36	51	1	8	13	4	11	7	11	3	4	4	6	7	10
38. Encephalitis	4	....	2	1	..	..	1	..	..	..	..	..	..	..	..	..	..	4	....	....	4	....	....	3	....	....	..	..	..	..	1	1	..	..	..	..	..	..
39. Meningitis	12	6	2	..	..	1	..	..	1	1	..	..	..	..	1	..	..	8	4	....	12	....	....	10	2	....	1	1	1	2	1	2	..	1	..	1	..	2

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STORMONT, DUNDAS AND GLENGARRY—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	35	....	1	..	..	1	..	2	2	1	3	4	6	6	6	2	1	20	15	....	31	4	....	10	25	....	3	4	1	5	7	2	1	1	3	3	2	3
94. Acute nephritis	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	1	..	..	1	..	..	..	..	..
95. Bright's disease	19	....	1	..	..	1	..	2	1	..	1	4	2	6	..	..	1	10	9	....	17	2	....	6	13	....	2	2	..	3	4	1	..	..	2	1	1	3
96. Other diseases of kidneys	7	....	..	..	..	..	..	..	1	..	..	..	3	..	3	..	..	4	3	....	7	....	....	4	3	....	1	1	..	..	2	..	..	1	..	2	..	..
97. Calculi of urinary tract	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	..	1	....	..	1	..	..	..	..	..	..	..	..	..	..
98. Diseases of the bladder	4	....	..	..	..	..	..	..	..	..	..	..	..	..	3	1	..	4	....	....	3	1	....	....	4	....	..	..	1	..	1	..	..	..	1	..	1	..
102. Ovarian tumor	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	..	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
103. Diseases of the tubes	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	10	....	..	..	..	..	..	..	1	2	5	2	..	..	..	..	..	....	10	....	10	....	....	....	10	....	1	.	2	3	1	..	..	1	.	..	2	..
106. Puerperal septicæmia	2	....	..	..	..	.	..	..	..	1	1	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	1	..	..	..	..	..	1	..
107. Puerperal convulsions	3	....	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	....	3	....	3	....	....	....	3	....	1	..	..	1	..	..	..	1	..	..	..	..
108. Other causes incident to child-birth	5	....	..	..	..	..	..	..	1	..	3	1	..	..	..	..	..	....	5	....	5	....	....	....	5	....	..	..	2	2	..	..	..	..	..	..	1	..
VIII. DISEASES OF SKIN.																																						
Group Total	6	1	..	..	..	..	..	..	..	..	..	..	1	1	3	..	..	5	1	....	2	4	....	1	5	....	2	1	..	..	..	..	.	2	1	..	..	..
109. Gangrene	3	....	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	2	1	....	....	3	....	....	3	....	..	1	..	..	..	..	..	2	.	..	..	..
111. Abscess	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	....	....	1	1	....	1	1	....	1	..	..	..	..	..	..	..	1	..	..	..
112. Other diseases of skin	1	....	.	.	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	1	.	..	..	..	..	..	..	..	..	..	..
IX. DISEASES OF LOCOMOTOR SYSTEM.																																						
Group Total	1	....	..	1	..	..	..	..	.	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
113. Diseases of the bones	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	77	77	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	45	31	1	77	....	....	77	....	....	4	10	9	6	6	9	7	3	8	4	4	7
117. Premature birth	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	..	..	..	1	1	1	1	..	1	..	..	..
118. Congenital debility	72	72	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42	29	1	72	....	....	72	....	....	4	10	9	5	5	8	6	3	7	4	4	7
119. XII. OLD AGE.																																						
Group Total	107	....	..	..	..	..	..	..	..	..	..	..	..	4	24	79	..	53	54	....	74	30	3	17	88	2	16	11	14	11	6	11	6	4	4	7	7	10

		Totals	Ages.																Sex.			Nativity.			Social Con.			Months.											
	Causes of Death.		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Male.	Female.	Not Stated.	Canada.	Foreign.	Not Stated.	Single.	Married.	Not Stated.	January.	February.	March.	April	May	June	July.	August.	September	October.	November	December.
			0.1	1.	2.	3.	4.																															
	Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	I.—GENERAL DISEASES.																																						
	(*A. Epidemic Diseases.*)																																						
	Grand Total	485	158	22	13	10	9	12	6	14	81	62	37	21	23	9	8	.	315	170	....	326	138	21	332	134	19	34	27	43	38	36	41	32	67	47	36	36	48
	Group Total	51	14	3	2	4	3	2	1	2	13	6	..	1	..	..	..	..	32	19	.	32	19	....	44	6	1	2	1	2	1	3	1	1	1	6	5	4	8
1.	Typhoid Fever	19	....	..	..	..	..	..	1	..	13	5	..	..	..	..	..	..	17	2	..	1	18	....	14	4	1	..	..	1	1	2	..	..	6	5	1	1	2
4.	Measles	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
5.	Scarlet Fever	2	....	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	..	..	2	..
6.	Whooping Cough	11	9	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	6	6	....	11	..	....	11	....	....	1	1	..	2	..	1	1	4	..	1	..	..
7.	Diphtheria and Croup	8	2	1	..	4	..	1	..	..	..	..	..	..	..	..	..	..	5	3	....	7	1	....	8	....	....	1	..	..	1	..	..	..	..	..	..	..	6
9.	Dysentery	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..	..
10.	Erysipelas	7	3	..	2	..	..	..	..	1	..	..	..	1	..	..	..	..	4	3	....	7	....	....	6	1	....	..	..	1	..	1	2	..	1	..	2	..	..
11.	Other epidemic diseases	2	....	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	..	..	..	..	2	..	..
	XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
	Group Total	31	1	..	1	3	1	1	1	3	4	1	2	3	4	2	4	..	26	5	....	26	4	1	16	15	....	..	1	2	5	1	8	3	7	..	..	1	3
120.	Suicides	3	....	..	..	.	..	..	..	..	1	..	..	..	1	..	1	..	....	3	...	2	1	....	1	2	....	..	..	..	..	..	3	..	.	..	..	..	..
121.	Fractures and dislocations	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..	..
122.	Burns and scalds	6	1	..	1	2	1	..	..	..	..	..	1	.	..	..	..	..	6	....	....	6	....	....	5	1	....	..	..	..	3	..	1	1	1	..	..	..	..
124.	Drowning	5	....	..	..	..	..	..	..	3	..	1	..	1	..	..	..	..	5	....	....	4	1	....	3	2	....	..	..	..	1	..	1	2	1	..	..	..	..
126.	Other accidental poisonings	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..	1
127.	Other accidental traumatisms	15	....	..	..	..	..	1	1	..	2	..	1	2	3	2	3	..	13	2	....	12	2	1	5	10	....	..	..	2	1	1	3	..	5	..	..	1	2
	XIV. ILL-DEFINED DISEASES.																																						
	Group Total	69	14	2	1	1	..	1	2	2	..	6	2	5	7	15	11	..	37	32	....	61	7	1	28	40	1	10	2	7	7	5	4	3	9	5	4	8	5
130.	Dropsy	8	....	..	..	..	..	..	..	..	..	..	..	1	1	4	2	..	2	6	...	6	2	....	....	8	....	2	1	..	..	1	1	1	1	..	1	..
131.	Heart failure	37	1	..	..	..	..	1	1	..	5	1	4	6	9	9	..	..	19	18	....	32	4	1	7	29	1	6	..	3	4	2	2	1	4	2	4	6	3
132.	Other ill-defined causes	24	13	2	1	1	..	1	1	1	..	1	1	..	..	2	..	..	16	8	....	23	1	....	21	3	....	2	1	4	3	3	1	1	4	2	.	1	2
134.	XV. STILL BIRTHS.																																						
	Group Total	31	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	9	1	31	....	....	31	....	....	1	1	1	6	3	3	4	3	2	3	1	3

CAUSES OF DEATHS BY COUNTIES—THUNDER BAY (including Municipalities of all classes), 1907.

THUNDER BAY.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	55	1	..	3	1	1	3	..	6	8	11	10	4	6	..	1	..	41	14	....	30	25	....	31	24	....	6	5	8	4	4	2	3	3	6	5	5	4
12. Septicæmia	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	1	....	1	1	....	1	1	....	..	..	1	1	..	..	..	..	..	..	..	..
13. Tuberculosis of lungs	20	....	..	..	..	..	..	..	3	5	4	5	..	3	..	..	..	16	4	....	9	11	....	11	9	....	2	1	4	..	3	2	1	..	..	2	4	1
15. Tuberculous Meningitis	4	....	..	1	..	1	1	..	..	..	..	1	..	..	..	..	..	3	1	....	3	1	....	4	....	....	1	1	..	1	..	..	..	..	1	..	..	..
21. General tuberculosis	14	....	..	2	1	..	2	..	3	1	3	1	1	..	..	..	..	10	4	....	8	6	....	10	4	....	1	2	3	1	1	..	..	2	3	1	..	..
23. Venereal diseases	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
25. Cancer of stomach and liver	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	1	....	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	3	....	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	2	1	....	2	1	....	....	3	....	..	..	..	..	..	..	..	..	1	2	..	..
33. Diabetes	2	....	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	1	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	1	1	....	..	..	..	..	..	..	..	..	1	1	..	..
35. Alcoholism	2	....	..	..	..	..	..	..	..	..	2	1	..	2	..	..	..	4	1	....	1	4	....	2	3	....	1	..	..	..	..	..	..	..	2	..	..	2
37. Other general diseases	5	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	..	..	1	..	..	..	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	32	17	2	5	..	2	..	..	..	..	..	1	..	3	1	1	..	18	14	....	29	2	1	26	6	....	1	2	2	2	5	3	3	4	2	1	2	5
39. Meningitis	10	6	..	3	..	1	..	..	..	..	..	..	..	..	..	..	..	6	4	....	9	1	....	10	....	....	..	1	1	..	1	..	2	2	..	..	1	2
42. Apoplexy	4	....	..	..	..	..	..	..	..	..	..	1	..	1	1	1	..	3	1	....	3	..	1	....	4	....	..	1	..	..	1	1	1	..	..	..	..	..
44. Paralysis	2	....	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	2	....	1	1	....	1	1	....	..	..	..	..	..	1	..	..	..	1	..	..
47. Other diseases of brain	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
49. Convulsions	15	11	1	2	..	1	..	..	..	..	..	..	..	..	..	..	..	8	7	....	15	....	....	15	....	....	1	..	1	2	3	1	..	2	2	..	1	2
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	17	....	..	..	..	1	..	..	..	3	..	2	4	4	2	1	..	9	8	....	6	9	2	4	13	....	1	..	5	2	..	5	2	1	..	..	1	..
53. Endocarditis	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
54. Heart disease	11	....	..	..	..	1	..	..	..	1	..	1	2	4	1	1	..	6	5	....	4	5	2	3	8	....	1	..	3	2	.	3	1	..	..	..	1	..
55. Angina pectoris	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
56. Diseases of arteries	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	....	..	....	2	....	1	1	....	..	..	..	..	..	..	..	1	1	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	54	17	9	2	1	1	2	2	..	6	7	2	..	4	1	..	..	30	24	....	41	11	2	43	9	2	6	8	6	4	6	5	2	3	3	..	4	7
61. Diseases of the larynx	2	....	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	1	..	..	..	..	..	1	..	..	..	..	..
63. Acute Bronchitis	5	3	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	..	2	..	..	..	..	..	2	..	..	..	1
64. Chronic bronchitis	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
65. Broncho-pneumonia	14	4	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	6	....	9	1	....	10	....	....	..	2	3	..	2	..	..	..	2	..	..	1
66. Pneumonia	33	10	2	1	..	1	1	2	..	6	6	2	..	2	..	..	..	19	14	....	22	9	2	25	6	2	5	4	1	4	4	4	1	1	..	4	4
70. Asthma and emphysema	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
72. Other diseases of respiratory system (phthisis ex.)	2	....	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	1	....	2	....	....	1	1	....	..	..	2	..	..	..	..	..	..	..	..	..

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THUNDER BAY.—*Concluded*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	100	....	..	..	1	1	4	3	4	40	27	13	5	2	..	..	..	93	7	....	39	46	15	52	32	16	9	4	9	8	7	12	13	8	7	7	6	10
120. Suicides	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
121. Fractures and dislocations	21	....	..	..	..	..	2	1	1	4	8	3	1	1	..	..	..	20	1	....	7	10	4	8	8	5	2	1	1	1	1	1	3	2	3	2	1	3
122. Burns and scalds	2	....	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	....	2	..	....	2	....	....	2	....	....	..	..	..	1	1	..	..	..	..	..	..	..
123. Physical phenomena	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	..	....	....	2	....	....	1	1	..	..	..	..	..	..	..	1	..	..	1	..
124. Drowning	20	....	..	..	..	..	2	..	1	6	8	1	1	..	..	..	..	18	2	....	7	8	5	15	3	2	..	..	1	1	..	5	6	2	1	1	2	1
126. Other accidental poisonings	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	..	....	2	..	....	....	2	....	2	..	..	..	..	..	..	..	..	..	..	..
127. Other accidental traumatisms	52	....	..	..	..	..	..	2	2	27	9	9	3	..	..	..	..	50	2	....	21	25	6	26	18	8	5	3	7	5	5	6	4	3	3	4	2	5
XIV. ILL-DEFINED DISEASES.																																						
Group Total	27	5	3	..	2	..	1	..	2	3	1	3	4	1	2	..	..	17	10	....	15	12	....	14	13	....	1	..	1	1	1	4	1	4	3	4	6	1
130. Dropsy	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..
131. Heart failure	20	3	3	..	2	..	1	..	1	3	1	2	1	1	2	..	..	12	8	....	10	10	....	10	10	....	..	..	1	1	..	3	1	3	2	2	6	1
132. Other ill-defined causes	6	2	..	..	..	..	..	..	1	..	..	1	2	..	..	..	..	4	2	....	4	2	....	4	2	....	1	..	..	..	1	1	..	1	..	2	..	..
134. XV. STILL BIRTHS.																																						
Group Total	17	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	7	....	17	....	....	17	....	....	1	3	1	2	1	..	..	1	..	3	1	4

CAUSES OF DEATH BY COUNTIES.—VICTORIA (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES. (*A. Epidemic Diseases.*)																																						
Grand Total	449	97	13	4	5	3	3	2	8	40	27	26	40	48	82	60	1	240	209	....	304	142	3	199	243	7	46	49	46	44	45	38	33	24	38	21	31	31
Group Total	25	3	4	1	.	2	..	..	1	2	1	2	1	1	4	3	..	15	10	....	17	8	....	13	11	1	2	6	1	6	..	3	3	2	..	.	2	..
1. Typhoid Fever	4	1	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	1	3	....	3	1	....	2	3	....	1	..	..	..	..	1	..	1	..	..	1	..
4. Measles	3	1	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	3	....	....	2	1	....	3	....	....	1	..	..	1	..	..	1	..	..	..	..	..	..

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VICTORIA — *Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	20	6	..	..	..	..	..	..	2	..	..	1	3	4	1	3	..	10	10	....	15	4	1	12	7	1	2	3	3	2	..	2	..	..	3	2	..	3
78. Other diseases of the stomach	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	....	2	....	....	2	....	....	..	..	1	1	..	..	..	..	..	..	..	..
80. Diarrhœa and enteritis (under 2 years)	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	....	4	....	....	4	....	....	..	..	..	..	..	..	..	..	2	1	..	1
81. Diarrhœa and enteritis (2 years and over)	6	....	..	..	..	..	..	..	1	..	..	..	1	..	1	3	..	4	2	....	2	3	1	2	3	1	1	2	1	..	..	..	..	..	1	..	..	1
83. Obstruction of intestines	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	....	1	1	....	2	....	....	1	..	1	..	..	..	..	..	..	..	..	..
84. Other diseases of intestines	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	..	1	..	..	..	..	..	1
87. Cirrhosis of liver	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
88. Biliary calculi	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
89. Other diseases of liver	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
91. Peritonitis, non-puerperal	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	19	....	..	..	..	..	..	..	..	1	1	2	3	5	6	1	..	12	7	....	10	9	....	1	18	....	..	..	1	2	3	2	4	..	4	1	1	1
94. Acute nephritis	2	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	....	....	....	2	....	....	2	....	....	..	..	..	..	1	1	..	..	..	..	..	..
95. Bright's disease	9	....	..	..	..	..	..	..	..	1	..	2	1	3	1	1	..	4	5	....	7	2	....	....	9	....	..	..	1	..	2	1	1	..	2	1	..	1
96. Other diseases of kidneys	3	....	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	3	....	....	1	2	....	....	3	....	..	..	..	..	..	..	1	..	2	..	..	..
98. Diseases of bladder	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	....	....	....	2	....	1	1	....	..	..	..	..	..	..	1	..	..	..	1	..
100. Uterine tumor	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
101. Other diseases of uterus	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
105. Other diseases of the genito-urinary system	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	3	....	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	....	3	....	3	....	....	1	2	....	..	..	..	1	..	..	1	..	..	..	..	1
108. Other causes incident to childbirth	3	....	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	....	3	....	3	....	....	1	2	....	..	..	..	1	..	..	1	..	..	..	..	1
XI. EARLY INFANCY.																																						
Group Total	35	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	14	....	35	....	....	35	....	....	..	2	3	2	10	3	3	2	4	2	1	3
117. Premature birth	15	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	6	....	15	....	....	15	....	....	.	1	..	1	4	1	2	1	2	..	1	2
118. Congenital debility	20	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	8	....	20	....	....	20	....	....	..	1	3	1	6	2	1	1	2	2	..	1
119. XII. OLD AGE.																																						
Group Total	52	....	..	..	..	..	..	..	..	..	..	..	..	..	2	19	31	..	26	26	....	11	41	....	2	50	....	4	8	6	6	3	4	2	4	2	2	8	3
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	19	....	..	..	..	..	..	..	2	1	2	1	4	..	1	8	..	11	8	....	9	9	1	5	14	....	1	1	1	..	..	7	1	3	3	..	..	2
120. Suicides	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
121. Fractures and dislocations	2	....	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....	2	....	....	2	..	....	2	....	..	..	..	..	..	1	1	..	..	..	..	..

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	107	4	2	1	..	..	3	..	4	12	20	19	7	15	14	6	..	49	58	....	79	27	1	34	72	1	7	9	7	9	14	6	8	12	7	13	5	10
12. Septicæmia	5	2	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	5	..	....	5	....	....	2	3	....	..	2	..	2	..	..	..	1	..	..	..	..
13. Tuberculosis of lungs	25	....	..	1	..	..	..	..	2	6	6	7	2	1	..	..	..	10	15	....	20	4	1	9	15	1	2	1	3	..	6	1	4	2	1	2	1	2
15. Tuberculous meningitis	2	....	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	..	..	..	..	1	1	..
20. Tuberculosis of other organs	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
21. General tuberculosis	20	1	..	..	..	..	1	..	2	2	7	3	1	2	1	..	..	9	11	....	16	4	....	11	9	....	1	1	1	4	2	2	2	2	1	1	1
25. Cancer of stomach and liver	14	....	..	..	..	..	1	..	..	..	..	1	2	4	3	3	..	4	10	....	6	8	....	1	13	....	1	1	..	1	2	..	..	2	..	5	..	2
26. Cancer of intestines	5	....	..	..	..	..	..	..	..	..	..	2	..	..	3	..	..	4	1	....	2	3	....	....	5	....	1	..	..	..	1	1	..	1	..	..	..	1
28. Cancer of breast	3	....	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	....	3	....	2	1	....	....	3	....	..	..	..	1	..	..	..	1	..	..	1	..
30. Cancer of other unspecified organs	10	....	..	..	..	..	..	..	..	..	1	2	2	3	2	..	..	4	6	....	7	3	....	1	9	....	1	2	..	1	..	2	..	1	..	1	..	2
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
32. Rheumatism	3	....	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	1	2	....	2	1	....	1	2	....	..	1	..	..	1	..	1	..	..	..	..	..
33. Diabetes	3	....	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	1	2	....	2	1	....	1	2	....	..	..	..	1	..	..	..	..	1	1	..	..
34. Anæmia, leukæmia	12	1	..	..	..	..	..	..	2	2	2	2	..	3	1	1	..	6	6	....	10	2	....	4	8	....	..	1	1	..	2	..	1	2	3	1	..	1
35. Alcoholism	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	....	..	1	..	..	..	..	..	..	1	..	..
37. Other general diseases	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	89	16	7	1	..	..	4	..	1	2	6	1	7	17	14	11	2	41	48	....	59	30	....	41	47	1	9	8	7	7	7	4	4	11	11	8	9
38. Encephalitis	2	....	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	1	..	..	1	..	..	..
39. Meningitis	11	4	2	..	..	..	1	..	..	..	3	..	..	1	..	..	..	6	5	....	11	....	....	8	3	....	..	1	3	2	..	..	..	..	3	1	..	1
41. Other diseases of spinal cord	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..
42. Apoplexy	34	....	..	..	..	..	..	..	..	1	..	5	9	12	5	2	..	18	16	....	17	17	....	6	27	1	6	4	2	2	1	2	1	1	4	5	3	3
43. Softening of brain	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	....	..	..	..	..	..	..	..	..	..	..	..
44. Paralysis	15	....	1	..	..	..	1	..	..	..	..	..	2	3	2	6	..	7	8	....	6	9	....	3	12	....	2	1	..	2	2	..	1	..	2	2	2	1
47. Other disease of brain	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	....	..	..	..	..	..	..	..	..	..	..	1
48. Epilepsy	3	....	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	....	..	..	..	..	..	..	1	..	..	1	1
49. Convulsions	17	12	3	1	..	..	..	..	..	..	..	1	..	..	..	..	..	6	11	....	17	....	....	16	1	....	..	2	2	..	3	1	1	1	2	2	2
51. Other diseases of nervous system	4	....	..	..	..	..	..	..	..	1	..	..	..	3	..	..	..	....	4	....	2	2	....	2	2	....	..	..	..	1	..	1	..	1	1	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	66	5	..	..	..	..	1	2	3	3	3	3	9	14	14	9	..	35	21	....	41	25	....	15	50	1	5	6	2	7	5	7	4	7	9	5	6	3
53. Endocarditis	2	....	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	1	..	..	..	..	1	..	..	..	..
54. Heart Disease	49	4	..	..	..	..	2	3	2	2	2	7	10	9	8	..	..	26	23	....	33	16	....	13	35	1	4	6	..	4	5	3	2	5	9	5	5	1
55. Angina pectoris	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
56. Diseases of arteries	7	....	..	..	..	..	..	..	..	..	..	..	..	3	3	1	..	4	3	....	2	5	....	....	7	....	..	..	..	1	..	2	2	..	..	..	1	1
57. Embolism and thrombosis	2	....	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	1	..	..	..	1	..	..	..	..
58. Diseases of veins	2	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	....	2	....	2	....	....	....	2	....	1	..	..	1	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	3	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	3	....	....	1	2	....	1	2	....	..	..	..	1	..	2	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	74	17	6	3	3	4	3	5	1	1	3	5	2	4	5	12	..	37	37	....	53	19	2	44	27	3	10	12	15	5	5	4	3	3	..	3	6	8
61. Diseases of larynx	3	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	2	....	3	....	....	2	1	....	..	..	1	..	..	1	..	..	..	..	1	..
63. Acute bronchitis	7	5	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	3	4	....	7	....	....	6	1	....	..	2	1	1	2	..	..	..	..	..	1	..

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WATERLOO.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
119. XII. OLD AGE.																																						
Group Total	68	....	..	..	..	..	..	..	..	..	..	..	..	4	19	44	1	30	38	....	7	61	....	6	59	3	9	10	9	6	10	1	4	5	7	2	4	1
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	28	....	..	..	1	..	2	1	1	9	1	..	1	6	1	5	..	21	7	....	11	16	1	12	15	1	..	2	3	3	2	7	2	..	5	1	1	2
120. Suicides	5	....	..	..	..	..	..	..	..	..	..	..	..	4	..	1	..	5	....	....	2	3	....	1	4	....	..	..	..	1	..	3	..	..	..	..	1	..
121. Fractures and dislocations	4	....	..	..	..	..	1	..	..	..	..	..	..	..	..	3	..	2	2	....	2	2	....	1	3	....	..	..	..	1	2	1	..	..	..	..	..	..
122. Burns and scalds	2	....	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	....	2	....	1	1	....	....	2	....	..	..	..	..	..	..	..	..	..	..	..	2
124. Drowning	8	....	..	..	1	..	1	1	1	2	..	..	..	1	..	1	..	8	....	....	4	4	....	5	2	1	..	..	..	1	..	..	2	2	..	2	1	..
125. Inhalation of poisonous gases	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
127. Other accidental traumatisms	8	....	..	..	..	..	..	..	..	5	1	..	1	..	1	..	..	5	3	....	1	6	1	4	4	....	..	2	1	1	..	1	..	..	3	..	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	35	2	..	..	..	..	1	1	1	3	3	4	3	7	9	1	..	18	17	....	22	13	....	10	24	1	7	3	2	5	4	2	3	..	6	2	..	1
130. Dropsy	8	....	..	..	..	..	..	..	1	..	2	..	1	..	4	..	..	3	5	....	5	3	....	2	6	....	1	..	..	..	3	1	..	..	3	..	..	..
131. Heart failure	16	....	..	..	..	..	1	1	..	..	..	2	2	5	4	1	..	9	7	....	8	8	....	3	12	1	6	3	2	1	1	..	..	..	1	1	..	1
132. Other ill-defined causes	11	2	..	..	..	..	..	..	..	3	1	2	.	2	1	..	..	6	5	....	9	2	....	5	6	....	..	..	..	4	..	1	3	..	2	1	....	..
134. XV. STILL-BIRTHS.																																						
Group Total	29	29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18	10	1	29	....	....	29	....	....	1	2	2	4	5	4	1	2	4	1	3	..

CAUSES OF DEATHS BY COUNTIES—WELLAND (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES. (*A. Epidemic Diseases.*)																																						
Grand Total	521	99	12	7	3	2	11	9	12	31	38	37	49	59	80	69	3	287	230	4	374	137	10	196	291	34	58	74	49	43	46	32	38	38	34	38	30	43
Group Total	33	3	2	3	1	1	2	..	1	6	2	2	3	1	1	4	1	14	19	....	25	7	1	19	12	2	4	8	1	1	1	..	3	3	4	5	1	2
1. Typhoid fever	11	....	..	..	..	..	1	..	..	4	2	1	2	..	..	..	1	4	7	....	9	2	..	5	4	2	1	3	..	..	..	..	..	1	2	..	2	..	2
2. Malarial fever	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..	..

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WELLAND.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	48	11	4	2	1	1	2	1	1	4	1	2	4	3	11	..	..	31	17	....	34	14	....	29	18	1	4	5	3	4	..	..	3	2	14	3	2	8
74. Tonsilitis	3	....	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	..	..	..	..	..	2	..	..	..	..	1
77. Gastritis	2	....	.	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	1	....	1	1	....	1	1	....	1	..	..	..	..	..	..	..	..	..	..	1
78. Other diseases of the stomach	5	1	..	1	..	..	..	..	..	..	..	..	1	..	2	..	..	5	..	....	2	3	....	2	3	....	1	..	..	..	..	..	..	..	1	1	1	1
80. Diarrhœa and enteritis, (under 2 years)	14	10	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	6	....	14	..	....	14	..	....	..	..	..	..	..	..	..	2	10	1	..	..
81. Diarrhœa and enteritis (2 years and over)	6	....	..	..	..	..	..	..	..	2	..	..	2	1	1	..	..	5	1	....	2	4	....	3	2	1	..	1	1	1	..	..	..	..	1	..	..	2
83. Obstruction of intestines	2	....	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	....	2	....	1	1	....	1	1	....	1	..	..	..	..	..	..	..	1	..	..	..
84. Other diseases of intestines	2	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	..	....	1	1	....	....	2	....	..	1	..	1	..	..	..	..	..	..	..	..
87. Cirrhosis of liver	3	....	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	2	1	....	2	1	....	....	3	....	..	..	1	..	..	..	..	..	..	1	..	1
88. Biliary calculi	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
89. Other diseases of the liver	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	1	2	....	2	1	....	....	3	....	..	2	1	..	..	..	..	..	..	..	..	..
91. Peritonitis, non-puerperal	2	....	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	1	..	1
92. Appendicitis	5	....	..	..	1	..	1	..	1	1	1	..	..	..	..	..	..	4	1	....	5	....	....	4	1	....	1	1	..	2	..	..	..	..	1	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	26	....	..	..	..	..	..	1	2	1	4	1	4	6	6	1	..	16	10	....	20	6	....	5	19	2	4	2	3	3	2	..	..	1	2	4	3	1
95. Bright's Disease	20	....	..	..	..	..	..	1	2	1	3	1	3	6	3	..	..	11	9	....	15	5	....	4	14	2	2	2	3	2	2	..	..	1	1	2	4	1
96. Other diseases of kidneys	4	....	..	..	..	..	..	..	..	..	..	..	..	1	..	2	1	4	..	....	3	1	....	1	3	....	1	..	..	..	..	..	..	..	1	2	..	..
99. Diseases of male genital organs, (non-venereal)	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	1	..	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
101. Other diseases of uterus	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
108. Other causes incident to childbirth	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
VIII DISEASES OF SKIN.																																						
Group Total	4	....	..	..	..	..	..	..	..	..	1	..	1	1	..	1	..	2	2	....	2	1	1	....	1	....	1	..	..	1	1	..	..	..	1	..	..	..
111. Abscess	4	....	..	..	..	..	..	..	..	..	1	..	1	1	..	1	..	2	2	....	2	1	1	....	1	....	1	..	..	1	1	..	..	..	1	..	..	..
X. MALFORMATIONS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	..	....	..	..	1	..	1	..	..	..	..	..	..	..
116. Congenital Malformations (still-births excluded)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	1	..	1	..	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	30	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	13	....	30	....	....	30	....	....	5	5	1	3	3	1	3	1	4	2	1	1
117. Premature birth	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	2	2	..	1	..	1	1	..	..	..	1	..
118. Congenital debility	22	22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	9	....	22	....	....	22	....	....	3	3	1	2	3	..	2	1	4	2	..	1
119. XII. OLD AGE.																																						
Group Total	46	....	..	..	..	..	..	..	..	..	..	..	..	..	4	18	24	..	25	21	....	23	22	1	4	34	8	7	6	4	3	3	4	5	5	1	2	4	2

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WELLINGTON.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(*B. Other General Diseases.*)																																						
Group Total	123	2	1	..	..	..	..	2	2	15	19	22	19	22	14	5	..	58	65	....	79	43	1	31	87	5	11	12	12	12	10	8	10	11	9	9	8	11
12. Septicæmia	9	1	..	..	..	..	..	1	..	2	2	1	1	..	1	..	..	4	5	....	8	1	....	4	5	....	4	1	..	1	1	1	..	..	1	..	..	..
13. Tuberculosis of lungs	34	....	1	..	..	..	..	..	2	7	9	6	4	3	2	..	..	16	18	....	26	8	....	14	19	1	3	4	4	2	3	1	3	4	1	5	1	3
15. Tuberculous meningitis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
16. Abdominal tuberculosis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
21. General tuberculosis	6	....	..	..	..	..	..	..	1	2	2	1	..	..	..	..	..	3	3	....	5	1	....	1	5	....	..	..	1	..	..	..	..	1	..	2	1	1
25. Cancer of stomach and liver	15	....	..	..	..	..	..	..	..	..	1	2	7	3	2	..	..	8	7	....	6	8	1	1	14	....	2	1	2	1	3	..	2	..	2	..	1	1
26. Cancer of intestines	2	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2	....	....	2	....	....	....	2	....	..	1	..	..	..	..	..	..	..	..	..	1
27. Cancer of genital organs	5	....	..	..	..	..	..	..	..	..	1	1	..	1	2	..	..	2	3	....	2	3	....	....	4	1	..	1	..	1	..	..	..	2	..	..	1	..
28. Cancer of breast	2	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	1	1	....	....	2	....	..	1	..	..	..	..	..	..	..	..	..	1
30. Cancer of other unspecified organs	23	....	..	..	..	..	..	..	..	1	1	3	8	5	4	1	..	11	12	....	9	14	....	6	16	1	1	2	3	2	1	3	1	2	2	1	2	3
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
32. Rheumatism	4	....	..	..	..	..	..	..	..	1	..	..	..	1	1	1	..	2	2	....	1	3	....	....	4	....	..	..	1	1	1	..	..	..	..	..	1	..
33. Diabetes	5	....	..	..	..	..	1	..	..	1	..	1	..	..	1	1	..	2	5	....	4	1	....	2	3	....	..	1	..	2	..	..	1	1	..	..	..	..
34. Anæmia, leukæmia	11	....	..	..	..	..	..	..	..	1	4	4	1	1	..	..	..	5	6	....	8	3	....	2	8	1	..	..	..	2	..	2	2	1	..	1	1	2
35. Alcoholism	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	....	....	1	..	..	..	..	1	..	..	..	..	..	..	..
37. Other General diseases	3	....	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	....	3	....	3	....	....	....	3	....	..	..	1	..	..	1	..	..	..	1	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	68	14	1	..	1	..	1	2	2	3	2	1	5	12	14	10	..	39	29	....	40	26	2	28	39	1	5	8	13	5	6	5	2	4	5	3	2	10
38. Encephalitis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	1	..	..	..	..	1	..	..	..	..
39. Meningitis	9	4	..	..	..	..	1	1	2	..	..	..	..	1	..	..	..	6	3	....	7	2	....	8	1	....	..	2	1	1	1	1	..	1	..	1	..
42. Apoplexy	21	....	..	..	..	..	..	..	..	1	..	..	2	6	7	5	..	14	7	....	7	13	1	3	17	1	2	3	2	3	1	2	..	1	2	1	..	4
43. Softening of brain	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..
44. Paralysis	17	....	..	..	..	..	..	..	..	..	1	..	3	3	7	3	..	10	7	....	7	9	1	1	16	....	1	..	3	1	3	2	1	..	1	1	..	4
47. Other diseases of brain	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	1	..	1	..	..	..	..	..	..	..
48. Epilepsy	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
49. Convulsions	9	7	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	6	3	....	9	....	....	8	1	....	..	..	2	3	..	..	..	1	1	..	1	1
51. Other diseases of nervous system	6	....	..	..	1	..	..	1	..	1	..	1	..	1	..	1	..	2	4	....	5	1	....	3	3	....	2	1	..	..	..	..	..	1	..	1	..	1
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	73	2	..	1	..	1	1	2	..	4	2	6	8	7	28	11	..	34	39	....	40	32	1	15	58	....	4	7	6	6	4	12	4	5	5	6	6	7
53. Endocarditis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
54. Heart disease	49	....	..	..	..	..	1	1	..	3	1	6	6	3	20	8	..	21	28	....	27	21	1	11	38	....	4	5	5	5	3	8	2	3	2	4	5	2
55. Angina pectoris	4	....	..	..	..	..	..	..	..	..	..	..	2	1	..	1	..	4	....	....	2	2	....	....	4	....	..	1	..	1	..	1	..	1	..	..	..	..
56. Diseases of arteries	14	2	..	1	..	1	..	..	..	..	..	..	..	2	6	2	..	7	7	....	6	8	....	3	11	....	..	..	..	..	2	2	1	2	2	1	2	3
57. Embolism and thrombosis	4	....	..	..	..	..	..	..	..	1	1	..	..	1	1	..	..	1	3	....	4	....	....	....	4	....	..	1	..	..	..	1	..	..	..	1	..	1
60. Other diseases of circulatory system	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	88	9	5	3	..	1	3	1	1	3	2	6	7	19	19	9	..	50	38	....	55	33	....	39	47	2	21	11	11	11	8	3	5	1	3	5	4	5
63. Acute bronchitis	7	3	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	6	....	6	1	....	6	1	....	1	1	..	1	1	..	2	..	..	..	..	1
64. Chronic bronchitis	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	....	....	1	1	..	1	1	....	..	..	1	..	..	..	..	..	..	..	..	..

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WELLINGTON—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VIII. DISEASES OF SKIN.																																						
Group Total	3	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	1	....	1	2	....	2	1	....	1	..	..	..	..	..	..	..	..	1	1
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
112. Other diseases of skin	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	....	1	1	....	2	....	..	..	..	..	..	..	..	..	..	..	1	1
X. MALFORMATIONS.																																					
Group Total	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	3	....	3	....	....	3	....	....	..	1	..	..	..	..	..	..	1	..	..	(1
116. Congenital malformations (still-births excluded)	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	3	....	3	....	....	3	....	....	..	1	..	..	..	..	..	..	1	..	..	1
XI. EARLY INFANCY.																																					
Group Total	58	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38	20	....	58	....	....	58	....	....	5	10	8	1	6	4	2	7	3	7	..	5
117. Premature birth	24	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	9	....	24	....	....	24	....	....	2	2	4	1	2	3	1	2	1	4	..	2
118. Congenital debility	34	34	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	11	....	34	....	....	34	....	....	3	8	4	..	4	1	1	5	2	3	..	3
119. XII. OLD AGE.																																					
Group Total	74	....	..	..	..	..	..	..	..	..	..	..	..	2	20	52	..	31	43	..	9	63	2	7	67	...	10	10	4	9	5	4	7	5	5	9	2	4
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																					
Group Total	34	3	1	1	1	..	..	1	1	6	5	4	5	..	2	4	..	23	11	....	23	11	....	16	18	....	3	3	2	3	9	1	1	3	1	2	4	2
120. Suicides	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
121. Fractures and dislocations	5	....	..	..	..	..	..	..	..	2	..	..	..	..	..	3	..	2	3	....	1	4	....	2	3	....	1	..	1	1	1	..	..	..	..	..	1	..
124. Drowning	6	....	..	1	1	..	..	1	..	1	1	..	1	..	..	..	..	6	....	....	5	1	....	5	1	....	..	..	..	..	3	1	1	..	..	..	1	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
127. Other accidental traumatisms	20	2	1	..	..	..	..	1	2	3	4	4	..	2	1	..	..	13	7	....	15	5	....	7	13	....	2	3	1	2	5	..	..	1	1	1	2	2
128. Injuries at birth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
XIV. ILL-DEFINED DISEASES.																																					
Group Total	29	1	1	2	..	..	..	1	..	2	2	4	4	4	6	2	..	16	13	....	17	12	....	12	17	....	1	1	1	4	5	..	1	2	4	5	3	1 2
130. Dropsy	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	....	2	....	....	2	....	..	..	..	..	..	..	..	1	..	..	1	..
131. Heart failure	16	....	..	..	..	..	..	1	..	1	1	4	1	3	3	2	..	8	8	....	8	8	....	6	10	....	1	..	..	3	4	..	1	1	2	2	1	1
132. Other ill-defined causes	9	1	1	2	..	..	..	..	..	..	1	..	1	1	2	..	..	5	4	....	7	2	....	5	4	....	..	1	1	..	1	..	..	..	..	2	3	..	1
133. Unknown causes	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2	....	....	2	....	....	1	1	....	..	..	..	1	..	..	..	..	..	..	1	..
134. XV. STILL BIRTHS.																																					
Group Total	30	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19	11	....	30	....	....	30	....	....	5	1	3	2	4	1	5	2	1	3	2	1

CAUSES OF DEATHS BY COUNTIES—WENTWORTH (including Municipalities of all classes), 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not Stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	1,419	375	43	14	9	10	27	15	29	92	93	112	101	161	193	129	16	722	688	9	914	464	41	677	665	77	112	118	135	136	129	118	114	132	104	91	102
Group Total	53	9	3	3	2	1	5	1	1	3	6	5	3	4	4	2	1	30	23	....	36	14	3	32	16	5	5	5	7	5	3	1	5	5	9	..	7
1. Typhoid Fever	11	....	..	..	..	..	1	..	..	1	3	4	1	1	..	..	..	8	3	....	4	6	1	4	6	1	..	..	..	..	..	..	..	2	3	3	..	3
4. Measles	3	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	3	....	....	2	1	....	3	....	....	..	..	..	1	1	..	..	..	..	..	..	1
5. Scarlet Fever	5	....	..	2	1	..	1	..	..	..	1	..	..	..	..	..	..	2	3	....	4	1	....	4	....	1	1	..	1	..	..	1	..	..	..	..	..	2
6. Whooping Cough	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	..	1	1	1	..	..	..	1	..	..	..
7. Diphtheria and Croup	12	2	..	1	1	1	2	1	1	1	2	..	..	..	..	..	..	7	5	....	10	....	2	11	....	1	2	3	2	1	..	..	..	..	3	..	1
8. Influenza	5	....	..	..	..	..	..	..	..	..	..	..	..	..	4	1	..	3	2	....	3	2	....	....	5	....	2	2	..	1	..	..	..	..	..	..	..	..
9. Dysentery	6	1	2	..	..	..	..	..	..	..	..	..	1	1	..	1	..	2	4	....	4	2	....	4	2	....	..	..	..	..	..	..	..	3	1	2	..	..
10. Erysipelas	7	1	..	..	..	..	..	..	..	1	..	1	1	2	..	..	1	4	3	....	5	2	....	2	3	2	..	..	..	3	1	1	..	1	..	1	..	..
(*B. Other General Diseases.*)																																					
Group Total	197	5	3	1	..	2	5	2	11	35	26	30	28	25	19	3	2	86	111	....	132	61	4	76	112	9	14	14	18	19	28	17	28	9	18	10	10	12
12. Septicæmia	7	....	..	..	..	..	..	..	1	1	1	1	..	2	1	..	..	4	3	....	3	3	1	2	4	1	1	1	1	1	1	1	..	..	..	..	..	1
13. Tuberculosis of lungs	59	1	1	..	..	..	1	2	6	21	11	10	3	1	1	..	1	24	35	....	48	11	....	33	26	....	5	1	8	7	8	4	7	4	6	2	4	2
14. Tuberculosis of Larynx	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	1	..	..	..
15. Tuberculous meningitis	10	1	2	1	..	2	1	..	1	2	..	..	..	..	..	..	..	5	5	....	9	1	....	9	1	....	..	3	1	2	1	..	1	..	1	..	..	1
16. Abdominal tuberculosis	3	....	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	2	1	....	2	1	....	1	2	....	1	1	..	1	..	..	..	..	..	..	..	..
19. White swelling	2	....	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	2	..	....	1	1	....	2	....	....	..	..	..	..	..	1	1	..	..	..	..	..
21. General Tuberculosis	22	1	..	..	..	..	..	..	2	5	6	5	2	1	..	..	..	12	10	....	17	5	....	9	9	4	1	2	2	2	7	3	1	..	2	..	1	1
23. Venereal diseases	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
24. Cancer of mouth	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	2	1	....	....	2	1	1	2	....	..	..	1	..	..	..	1	..	..	1	..	..
25. Cancer of stomach and liver	19	....	..	..	..	..	..	..	..	2	2	7	3	5	..	..	..	11	8	....	9	10	....	2	17	....	1	1	2	1	1	4	1	..	1	3	1	3
26. Cancer of intestines	4	....	..	..	..	..	..	..	..	..	..	..	3	1	..	..	..	3	1	....	2	2	....	4	....	....	..	..	..	..	..	..	..	..	1	2	1	..
27. Cancer of genital organs	5	....	..	..	..	..	..	..	..	..	..	2	..	3	..	..	..	1	4	....	2	3	....	....	4	1	..	1	..	..	1	..	1	..	..	1	..	..	..
28. Cancer of breast	5	....	..	..	..	..	..	..	..	..	..	2	..	..	2	1	..	....	5	....	2	3	....	....	5	....	..	..	..	..	2	..	2	1	..	..	..	..
29. Cancer of skin	3	....	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	3	..	....	1	2	....	....	3	....	1	..	..	..	1	..	1	..	..	..	..	..
30. Cancer of other unspecified organs	21	....	..	..	..	..	..	..	..	..	2	2	3	7	4	2	1	5	16	....	10	9	2	4	16	1	1	3	..	2	1	2	5	1	2	1	1	1
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
32. Rheumatism	3	....	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	....	3	....	1	2	....	1	2	....	1	1	..	..	..	1	..	..	..	..	1	..
33. Diabetes	3	....	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	....	3	....	3	....	....	....	3	....	..	..	..	..	..	..	2	..	..	..	..	..
34. Anæmia, leukæmia	18	1	..	..	..	..	1	..	1	3	1	1	4	4	2	..	..	10	8	....	14	4	....	7	11	..	1	..	3	1	1	..	4	2	1	..	..	2
35. Alcoholism	4	....	..	..	..	..	..	..	..	..	..	1	1	2	..	..	..	1	3	....	3	1	....	2	1	1	..	..	..	1	..	2	1	..	..	..	..	..
37. Other general diseases	3	....	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	....	3	....	2	1	....	1	1	1	1	..	..	..	1	..	..	..	..	1	..	..

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	182	24	7	3	3	1	4	4	2	8	12	27	15	22	35	14	1	87	95	....	112	68	2	67	101	14	15	18	16	20	11	17	20	12	15	11	14	13
39. Meningitis	28	9	5	3	1	..	2	3	..	..	2	2	..	1	..	..	..	14	14	....	27	1	....	24	2	2	3	.	1	4	3	3	3	3	3	..	3	2
40. Locomotor ataxia	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	....	....	....	2	....	....	1	1	..	1	..	..	..	..	..	..	..	..	1	..
41. Other diseases of spinal cord	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
42. Apoplexy	53	1	..	..	..	..	1	..	1	1	..	9	5	13	13	8	1	25	28	....	21	31	1	7	38	8	7	5	4	6	4	3	4	1	6	4	6	3
43. Softening of Brain	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..
44. Paralysis	49	1	..	..	..	..	..	..	..	..	4	9	7	5	18	5	..	22	27	....	24	25	....	7	41	1	2	8	7	3	4	4	7	4	4	2	2	2
46. Other forms of mental disease	8	....	..	..	..	..	..	1	..	..	1	3	..	2	1	..	..	3	5	....	5	2	1	2	6	....	..	..	1	1	..	..	..	1	..	3	.	2
47. Other diseases of brain	2	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	2	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	2	..	..	..
48. Epilepsy	8	....	..	..	..	1	..	..	..	2	4	1	..	..	..	..	..	5	3	....	8	....	....	7	1	....	..	..	..	2	..	2	3	..	..	..	1	..
49. Convulsions	20	12	2	..	2	..	1	..	..	3	..	..	..	..	..	..	..	9	11	....	18	2	....	16	3	1	2	2	2	..	3	2	1	..	2	..	4
50. Tetanus	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	1	....	2	....	....	....	1	1	..	..	..	..	..	..	1	..	..	..	1	..
51. Other diseases of the nervous system	8	....	..	..	..	..	..	1	1	..	1	2	..	2	1	..	..	5	3	....	5	3	....	3	5	....	1	1	1	1	..	1	1	2	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	111	9	1	..	..	..	1	1	4	5	6	7	16	24	24	11	2	54	57	....	68	41	2	32	71	8	3	5	11	10	13	13	11	8	6	13	6	12
52. Pericarditis	3	1	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	....	3	....	3	....	....	2	1	....	..	..	1	..	..	1	..	..	1	..	..	..	..
53. Endocarditis	9	....	..	..	..	..	..	..	2	3	..	..	3	..	..	..	1	6	3	....	5	4	....	4	5	....	1	1	1	..	..	2	2	1	..	1	..	..
54. Heart disease	74	5	1	..	..	..	1	..	2	1	5	5	10	17	18	8	1	37	37	....	45	27	2	20	48	6	2	2	3	9	9	10	6	4	5	9	5	10
55. Angina pectoris	3	....	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	2	1	....	1	2	....	....	3	....	..	..	..	..	1	..	1	..	..	1	..	..
56. Diseases of arteries	14	....	..	..	..	..	..	..	..	..	..	1	1	4	6	2	..	8	6	....	7	7	....	2	11	1	..	2	3	..	2	..	2	2	..	1	2
57. Embolism and thrombosis	2	....	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	....	1	1	....	....	1	1	.	.	2	..	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	6	3	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	....	6	....	6	....	....	4	2	....	..	..	1	1	1	..	..	1	..	2	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	235	42	18	3	3	4	4	3	5	10	14	11	17	34	37	27	3	133	102	....	140	89	6	98	124	13	27	24	28	28	25	15	14	12	15	13	15	19
61. Diseases of larynx	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
62. Diseases of the thyroid body	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
63. Acute bronchitis	23	9	3	1	..	..	..	..	..	..	..	..	..	2	3	5	..	13	10	....	13	10	....	14	9	....	1	9	2	2	2	..	1	2	2	1	..	1
64. Chronic bronchitis	9	..	..	..	..	..	..	..	..	..	..	..	..	2	6	1	..	7	2	....	2	7	....	....	9	....	..	2	1	1	..	2	..	1	..	1	..	1
65. Broncho-pneumonia	40	14	5	1	1	2	3	..	..	1	1	..	..	3	2	7	..	22	18	....	30	9	1	26	12	2	5	2	6	3	4	1	2	3	4	4	2	4
66. Pneumonia	140	17	10	1	1	1	1	3	4	7	13	9	13	24	21	12	3	81	59	....	82	53	5	51	81	8	17	9	17	21	17	9	10	5	7	5	11	12
67. Pleurisy	4	....	..	..	..	..	..	..	..	2	..	..	..	1	1	..	..	3	1	....	2	2	....	2	2	....	.	..	1	..	1	1	.	1	..	..	..	..
68. Congestion of lungs	8	1	..	..	1	..	..	..	..	..	..	..	1	1	2	2	..	3	5	....	5	3	....	1	6	1	1	1	1	..	..	..	1	..	1	1	2	..
70. Asthma and emphysema	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	....	....	1	1	....	1	1	....	..	..	..	..	..	1	..	..	..	..	..	1
71. Hemorrhage of lungs	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	1	1	....	....	1	1	..	..	..	..	..	..	..	..	..	1	..	..
72. Other diseases of respiratory system, phthisis excepted	5	....	..	..	..	..	..	..	1	..	..	2	1	..	1	..	..	1	4	....	2	3	....	2	2	1	2	..	..	..	1	..	..	1	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	115	53	5	2	..	..	4	2	3	6	4	4	2	17	7	5	1	58	57	....	78	31	6	74	39	2	2	6	10	8	4	7	11	21	22	9	10	5
73. Diseases of mouth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
75. Other diseases of pharynx	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
76. Ulcer of stomach	5	....	..	..	..	..	..	1	..	1	..	..	1	..	2	..	..	2	3	....	3	2	....	1	3	1	..	..	..	3	..	..	..	..	..	1	1
77. Gastritis	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	....	2	....	....	2	....	....	2	....	..	..	..	..	..	..	..	..	1	..	..	1
78. Other diseases of the stomach	12	8	1	..	..	..	1	..	..	..	..	..	..	1	..	..	1	9	3	....	9	2	1	10	2	....	..	..	2	1	..	..	1	4	2	1	1	..
80. Diarrhœa and enteritis (under 2 years)	40	36	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	20	....	36	3	1	40	....	....	..	2	1	1	1	..	4	12	13	5	1	..

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WENTWORTH. —*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES. **Group Total**	65	7	3	..	..	1	2	1	..	16	9	12	3	2	5	1	3	51	14	....	36	20	9	31	27	7	3	7	10	6	6	7	5	4	7	5	3	2
120. Suicides	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	....	....	1	1	....	....	2	....	..	..	..	..	..	2	..	..	..	..	..	..
121. Fractures and dislocations	8	....	..	..	..	..	1	..	..	1	2	..	..	..	2	1	1	5	3	....	2	4	2	4	2	2	..	1	..	..	3	..	2	1	..	1	..	..
122. Burns and scalds	3	....	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	..	2	..	..	..	..	..	1	..	..	..
123. Physical phenomena	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
124. Drowning	5	....	1	..	..	..	..	1	..	1	2	..	..	..	..	..	..	4	1	....	5	....	....	3	2	....	..	1	..	..	..	1	1	..	..	1	1	..
125. Inhalation of poisonous gases	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	....	1	1	....	1	1	....	..	1	..	..	..	1	..	..	..	..	..	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	..	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
127. Other accidental traumatisms	34	....	1	..	..	..	..	..	..	12	4	11	1	..	3	..	2	31	3	....	14	13	7	13	16	5	2	3	7	5	3	1	2	3	4	2	1	1
128. Injuries at birth	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	....	5	....	....	5	....	....	..	..	..	..	..	..	1	..	..	1	1	1
129. Homicide	4	1	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	1	3	....	3	1	....	2	2	....	..	1	1	1	..	1	..	..	..	..	..	..
XIV. ILL-DEFINED DISEASES. **Group Total**	71	13	3	..	1	..	1	1	1	3	2	6	6	12	15	6	1	35	36	....	42	27	2	27	39	5	5	6	8	4	7	6	4	8	7	5	7	4
130. Dropsy	6	....	..	..	..	..	..	..	..	..	..	1	1	2	2	..	..	4	2	....	3	3	....	....	5	1	1	..	1	..	1	1	1	..	..	1	..	..
131. Heart Failure	36	1	..	..	..	..	1	1	1	1	..	4	4	7	10	6	..	21	15	....	18	17	1	6	27	3	3	2	4	2	3	3	2	6	2	2	5	2
132. Other ill-defined causes	27	12	3	..	1	..	..	..	..	2	2	..	1	3	3	..	..	8	19	....	21	6	....	21	6	....	1	4	3	2	2	2	.	2	5	2	2	2
133. Unknown causes	2	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	2	....	....	....	1	1	....	1	1	..	..	..	..	..	1	..	1	..	..	..	..
134. XV. STILL BIRTHS. **Group Total**	110	110	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55	47	8	110	....	....	110	....	....	8	9	8	10	8	11	6	13	11	11	9	6

CAUSES OF DEATHS BY COUNTIES—YORK (including Municipalities of all classes), 1907.

Causes of Death.	Total.	Ages. Under 5. 0.1.	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES. (*A. Epidemic Diseases.*) **Grand Total**	5,793	1,644	213	79	70	45	133	90	142	478	375	408	469	573	590	442	40	3,067	2,704	22	3,751	1,852	190	3,043	2,513	237	489	541	523	500	497	493	407	538	486	441	421	447
Group Total	381	52	46	30	33	18	52	17	17	22	21	13	12	9	19	16	4	186	195	..	263	114	4	2 88	88	5	20	37	34	32	31	45	28	34	31	37	25	27
1. Typhoid Fever	67	....	2	2	1	..	..	1	8	22	14	8	7	2	..	..	..	44	23	..	32	35	..	30	36	1	3	7	5	2	4	4	2	3	10	11	11	5
2. Malarial Fever	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	..	1	....	..	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	551	20	3	1	2	1	5	9	21	36	28	42	86	114	128	53	2	312	239	..	267	251	33	139	372	40	50	48	43	39	60	53	40	38	37	53	41	19
52. Pericarditis	2	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	..	2	..	..	..	2	..	..	..	1	..	1	..	..	..	..	..	..	..	..
53. Endocarditis	71	1	1	..	1	..	3	3	2	5	4	4	13	16	10	8	..	40	31	..	31	33	7	22	43	6	5	4	4	3	4	13	6	5	2	8	6	11
54. Heart disease	340	9	2	1	1	1	2	6	18	25	16	34	49	63	82	29	2	181	159	..	170	154	16	93	225	22	35	33	27	26	36	28	24	22	24	34	28	23
55. Angina pectoris	29	..	..	..	..	..	..	..	..	2	..	3	6	9	6	3	..	20	9	..	18	8	3	3	24	2	3	2	4	2	1	..	3	5	2	3	3	1
56. Diseases of arteries	77	..	..	..	..	..	..	..	..	1	..	1	13	25	25	12	..	57	20	..	29	44	4	7	62	8	6	5	5	3	14	7	5	3	9	6	2	12
57. Embolism and thrombosis	19	2	..	..	..	..	..	..	..	2	4	..	4	1	5	1	..	8	11	..	9	9	1	5	13	1	1	2	2	5	1	2	1	1	..	1	2	1
58. Diseases of veins	2	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	1	1	..	1	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..
59. Diseases of lymphatics	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	10	6	..	..	..	..	..	..	1	1	2	..	..	..	..	..	..	4	6	..	6	2	2	7	2	1	..	1	..	..	3	2	1	1	..	1	..	1
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	747	151	47	17	9	11	18	6	14	50	42	73	59	77	83	81	6	395	352	..	426	296	25	356	349	12	81	112	101	96	84	51	25	27	25	35	55	52
61. Diseases of larynx	8	5	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	3	5	..	6	2	..	6	2	..	1	..	2	1	2	..	1	..	..	..	1	..
62. Diseases of the thyroid body	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..
63. Acute bronchitis	72	41	5	4	1	1	2	1	..	2	1	..	..	2	5	7	..	35	37	..	53	17	2	58	13	1	9	12	10	4	7	7	3	3	1	6	3	7
64. Chronic bronchitis	49	..	..	..	..	..	..	..	..	1	..	3	3	8	11	21	2	17	32	..	14	33	2	9	38	2	7	9	7	4	4	2	..	1	3	1	6	5
65. Broncho-pneumonia	122	50	22	4	4	6	5	1	..	4	1	3	2	7	7	4	2	64	58	..	94	25	3	93	23	6	11	17	18	11	13	12	8	7	6	5	9	5
66. Pneumonia	425	49	18	8	4	3	10	4	13	34	37	59	46	50	54	34	2	236	189	..	227	183	15	173	224	28	43	68	58	68	50	26	11	14	12	17	30	28
67. Pleurisy	14	..	..	..	..	1	1	..	1	3	1	1	..	3	1	2	..	8	6	..	7	6	1	4	8	2	4	1	..	2	1	2	..	1	..	..	2	1
68. Congestion of lungs	33	6	2	..	..	..	..	..	..	3	1	5	3	2	2	9	..	14	19	..	15	16	2	10	22	1	2	3	5	2	5	5	1	..	1	4	1	4
69. Gangrene of lungs	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
70. Asthma and emphysema	17	1	..	..	..	..	..	..	..	2	..	1	4	2	3	4	..	12	5	..	7	10	..	1	16	..	3	2	..	2	2	..	..	1	1	2	2	2
71. Hemorrhage of lungs	2	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	2	..	..	1	1	..	..	..	2	..	..	1	..	..	..	1	..	..	..	..	..	..
72. Other diseases of respiratory system (phthisis ex.)	3	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	3	..	..	2	1	..	2	1	..	..	..	..	1	..	..	..	..	1	..	1	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	633	335	36	9	1	3	9	9	17	40	28	30	40	34	27	12	3	358	277	..	502	110	21	461	161	11	12	36	29	30	33	32	43	148	100	61	43	36
73. Diseases of mouth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..
74. Tonsilitis	6	..	1	..	..	..	..	..	1	1	2	..	..	..	..	1	..	4	2	..	5	1	..	3	3	..	..	1	..	..	1	1	..	..	3	..	..	..
75. Other diseases of pharynx	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
76. Ulcer of stomach	6	..	..	..	..	..	..	..	..	2	2	1	1	..	..	..	..	1	5	..	5	1	..	1	5	..	..	..	..	..	2	1	2	..	1	..	..	..
77. Gastritis	80	57	3	..	..	1	..	1	1	1	4	1	5	3	3	..	..	42	38	..	68	10	2	63	15	2	4	2	10	7	7	8	4	14	9	8	3	4
78. Other diseases of the stomach	46	27	2	..	..	1	..	..	..	..	..	3	6	1	5	..	1	30	16	..	38	7	1	31	14	1	4	3	2	1	6	..	4	11	2	3	6	4
79. Dentition	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..
80. Diarrhœa and enteritis (under 2 years)	254	229	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	151	103	..	225	18	11	251	..	..	12	4	2	5	3	5	16	100	61	28	9	9
81. Diarrhœa and enteritis (2 years and over)	44	..	..	6	1	1	5	1	1	2	3	2	4	10	5	3	..	19	25	..	28	16	..	22	21	1	..	3	..	4	2	2	4	12	7	5	3	2
82. Hernia	9	..	..	..	..	..	..	..	..	..	..	1	2	2	3	..	1	6	3	..	4	4	1	..	7	2	1	1	..	1	..	..	..	..	2	1	1	2
83. Obstruction of intestines	42	9	3	2	..	..	..	1	1	5	..	6	5	3	4	3	..	24	18	..	24	17	1	19	22	1	5	2	4	..	3	5	7	3	4	1	5	3
84. other diseases of intestines	13	6	2	..	..	..	..	..	..	1	..	..	2	1	1	..	..	8	5	..	9	3	1	8	5	..	1	3	1	2	..	3	2	1	..	..	..	..
87. Cirrhosis of liver	18	..	..	..	..	..	..	..	..	1	2	2	5	4	2	1	1	11	7	..	12	6	..	6	11	1	1	3	1	1	..	1	1	2	2	2	2	2
88. Biliary calculi	8	1	..	..	..	..	..	..	1	1	..	..	2	2	1	..	..	5	3	..	6	2	..	3	5	..	1	2	2	..	1	..	..	1	..	1	2	..
89. Other diseases of liver	12	1	..	1	..	..	..	..	1	1	..	1	2	..	3	2	..	5	7	..	8	3	1	7	5	..	2	2	..	..	..	..	..	1	3	1	1
91. Peritonitis, non-puerperal	52	2	..	..	..	..	4	1	3	11	8	7	4	5	3	1	..	19	33	..	36	14	2	21	30	1	6	8	5	5	3	2	2	1	3	4	7	6
92. Appendicitis	39	..	..	..	..	..	..	4	9	11	6	4	2	2	..	..	1	28	11	..	30	8	1	20	17	2	5	3	2	1	3	3	1	3	5	3	4	3
93. Other diseases of the digestive system (cancer and tuberculosis excepted)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..

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YORK—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	28	29	30	31	32	33	34	35	36	37	38
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																					
Group Total	292	7	11	4	6	2	11	12	17	64	43	34	33	21	11	9	7	216	76	..	150	110	32	126	132	34	20	22	16	14	18	24	43	29	32	29	26	19
120. Suicides	43	....	..	..	..	..	..	..	1	13	6	8	7	3	3	1	1	36	7	..	13	23	7	10	27	6	4	3	3	3	3	5	3	4	5	4	3
121. Fractures and dislocations	14	....	..	..	..	..	..	..	..	1	3	2	3	..	2	3	..	8	6	..	7	7	..	4	9	1	4	1	..	1	2	..	..	2	3	1	..	..
122. Burns and Scalds	29	1	9	2	5	..	4	..	1	4	..	1	..	2	..	..	..	8	21	..	21	8	..	21	8	..	4	2	2	2	1	5	4	1	2	2	2	2
123. Physical phenomena	6	....	..	..	..	..	..	..	..	3	2	..	1	..	..	..	..	4	2	..	2	4	..	4	2	..	..	3	..	..	1	1	..	..	1	..	..	..
124. Drowning	51	....	1	..	..	..	3	9	5	16	4	3	3	5	..	..	2	45	6	..	35	11	5	31	10	10	2	2	1	2	4	4	19	5	3	4	4	1
125. Inhalation of poisonous gases	17	1	..	..	..	..	..	..	..	4	2	1	4	2	2	..	1	12	5	..	9	5	3	4	11	2	1	1	4	..	1	..	..	2	2	4	2	..
126. Other accidental poisonings	18	....	1	1	..	..	1	1	1	3	..	4	3	2	..	..	1	9	9	..	10	5	3	8	9	1	1	1	1	..	2	..	2	3	2	2	2	2
127. Other accidental traumatisms	107	1	..	1	1	2	3	2	9	20	25	14	11	7	4	5	2	89	18	..	46	47	14	41	53	13	4	9	5	6	4	10	12	12	15	11	11	8
128. Injuries at birth	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3	....	..	3	....	..	..	..	..	..	..	..	..	..	..	..	1	2
129. Homicide	4	1	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	4	....	..	4	....	..	....	3	1	..	..	..	..	..	1	1	1	..	..	..	1
XIV. ILL-DEFINED DISEASES.																																					
Group Total	260	110	9	1	1	..	2	1	12	12	20	16	31	22	17	5	121	139	..	176	75	9	149	103	8	19	26	24	14	19	19	15	28	37	24	17	18
130. Dropsy	11	3	..	..	..	..	..	..	..	1	..	2	..	3	..	2	..	4	7	..	6	5	..	3	8	..	..	2	..	..	3	1	..	..	1	1	..	3
131. Heart failure	88	7	..	..	..	..	..	..	..	5	9	13	10	17	15	10	2	41	47	..	44	42	2	21	62	5	16	11	12	5	4	6	7	6	11	5	3	2
132. Other ill-defined causes	157	99	9	1	1	..	2	1	6	3	5	6	9	7	5	2	73	84	..	125	26	6	124	31	2	3	13	11	8	12	12	8	22	25	17	14	12
133. Unknown causes	4	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	3	1	..	1	2	1	1	2	1	..	..	1	1	..	..	..	..	..	1	..	1
134. XV. STILL BIRTHS.																																					
Group Total	397	397	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	197	183	17	397	....	..	397	....	..	36	34	31	35	41	37	29	35	39	17	24	39

CAUSES OF DEATHS BY CITIES—IN BELLEVILLE, 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29	30-39.	40-49.	50-59.	60-69.	70-79.	80 & over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity.	Social con. Single.	Married.	Not stated.	Months. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1. GENERAL DISEASES. (*A. Epidemic Diseases*).																																				
Grand Total	181	34	2	..	..	..	5	2	6	16	8	11	20	21	35	20	1	97	84	....	137	42	2	72	106	3	16	18	27	18	20	14	8	19	12	11	8	10
Group Total	11	....	..	..	..	..	1	..	3	3	1	..	..	2	1	..	..	6	5	...	10	1	....	6	5	....	2	3	..	1	1	1	..	..	..	1	1	1
1. Typhoid Fever	8	....	..	..	..	..	..	..	3	2	1	..	..	2	..	..	..	5	3	....	7	1	....	4	4	....	2	2	..	..	1	1	..	..	..	1	1	..
7. Diphtheria and Croup	2	....	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	1	..	..	..	..	..	..	..	..	..	1
8. Influenza	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..

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BELLEVILLE—*Continued.*

Number of column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	4	....	..	..	..	..	..	..	..	1	..	..	..	1	1	1	..	3	1	....	2	2	....	....	4	....	..	..	..	1	..	1	..	.	1	1	..	..
95. Bright's disease	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	....	....	1	1	....	....	2	....	..	..	..	..	1	..	..	..	1	..	..	..
101. Other diseases of uterus	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
105. Other diseases of the genito-urinary system	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	2	....	.	..	..	..	..	..	..	2	..	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	2	..	..	..	..	..	..	..	..	..
106. Puerperal septicæmia	2	....	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	2	..	..	..	..	..	..	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	2	....	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	1	....	....	2	....	....	2	....	.	..	1	..	..	..	..	..	1	..	..	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	..	..	..	1	..	..	..	..	..	..	..	..	..
111. Abscess	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
XI. EARLY INFANCY.																																						
Group Total	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	4	....	6	....	....	6	....	....	1	1	3	..	..	..	..	..	..	1	..
118. Congenital debility	6	6	.	..	..	.	..	..	..	..	..	..	..	..	..	..	..	2	4	....	6	....	....	6	....	....	1	1	3	..	..	..	..	..	..	1	..
119. XII. OLD AGE.																																						
Group Total	15	....	..	..	..	..	..	..	..	..	..	..	..	..	5	10	..	7	8	....	6	9	....	....	15	....	1	2	4	2	..	..	1	2	2	..	..	1
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	10	....	..	..	..	..	1	..	1	3	2	..	1	2	..	..	..	8	2	....	8	1	1	2	6	2	2	..	2	1	1	1	..	1	..	..	1	1
121. Fractures and dislocations	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
122. Burns and scalds	2	....	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	....	2	....	....	....	2	....	1	..	1	..	..	..	..	..	..	..	..	..
123. Physical phenomena	2	....	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	1	....	2	....	....	1	1	....	..	..	1	1	..	..	..	..	..	..	..	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	....	1	....	....	....	1	..	..	..	..	..	..	..	..	..	1	..	..
127. Other accidental traumatisms	4	....	..	..	..	..	1	..	1	2	..	..	..	..	..	..	..	4	....	....	3	....	1	1	2	1	..	..	..	..	1	1	..	1	..	..	..	1
XIV. ILL-DEFINED DISEASES.																																						
Group Total	14	1	..	..	..	..	1	..	..	1	..	1	1	1	5	2	1	7	7	....	12	2	....	5	9	....	..	3	1	2	1	2	..	1	2	1	1	..
131. Heart failure	8	...	..	..	..	..	1	..	..	1	..	1	..	1	2	2	..	2	6	....	7	1	....	3	5	....	..	2	1	1	..	2	..	1	1	..	..	..
132. Other Ill-defined causes	5	....	..	..	..	..	..	..	..	..	..	..	1	..	3	..	1	4	1	....	4	1	....	1	4	....	..	1	..	1	1	..	..	..	..	1	1	..
133. Unknown causes	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	5	....	7	....	....	7	....	....	..	..	..	..	2	..	..	2	..	2	1	..

CAUSES OF DEATHS BY CITIES—BRANTFORD, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	359	86	18	7	2	2	9	5	12	20	22	32	28	38	33	39	7	195	164	....	240	98	31	176	173	10	37	40	33	34	34	19	19	28	30	33	31	21
Group Total	26	....	9	2	..	1	4	1	1	2	..	..	..	3	2	1	..	17	9	....	17	9	....	19	7	....	4	3	2	3	5	2	.	2	1	2	1	1
1. Typhoid Fever	5	....	..	..	..	..	..	1	1	2	..	..	..	..	1	..	..	4	1	....	2	3	....	2	3	....	1	..	..	..	..	..	..	1	1	2	..	..
4. Measles	2	....	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	1	..	1	..	..	..	..	..	..
5. Scarlet Fever	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	10	....	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	7	3	....	9	1	....	10	....	....	1	2	1	1	4	..	..	..	..	1	..	..
7. Diphtheria and Croup	2	....	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	1	..	1	..	..	..	..
8. Influenza	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	....	..	1	1	....	....	2	....	1	1	..	..	..	..	..	..	..	..	..	..
9. Dysentery	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..
10. Erysipelas	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	1	....	....	2	....	1	1	....	....	..	..	..	1	1	..	..	..	..	..	..
11. Other epidemic diseases	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
(*B. Other General Diseases.*)																																					
Group Total	60	1	1	1	..	..	..	3	4	10	11	5	13	4	4	1	2	29	31	....	41	15	4	25	30	5	3	5	7	7	5	4	5	4	6	6	5	3
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	....	1	..	1	..	..	..	..	..	..	..	..	..	..
13. Tuberculosis of lungs	21	....	..	..	..	..	..	1	2	7	5	3	1	1	..	..	1	8	13	..	13	5	3	10	11	....	1	1	3	3	3	2	1	..	1	2	3	1
15. Tuberculosis meningitis	3	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	2	1	....	3	....	....	..	1	..	..	..	..	..	1	..	..	1	..
21. General Tuberculosis	8	....	..	..	..	..	..	1	1	2	2	..	2	..	..	..	..	3	5	....	6	2	....	4	3	1	..	2	1	..	..	3	1	1	..	..	..	..
25. Cancer of stomach and liver	4	....	..	..	..	..	..	..	..	..	..	..	2	..	1	1	..	2	2	....	2	2	....	....	4	....	..	..	1	1	1	..	..	1	..	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
30. Cancer of other unspecified organs	9	....	..	..	..	..	..	..	..	..	2	..	2	2	3	..	..	5	4	....	5	3	1	2	7	....	1	..	..	3	..	1	..	..	1	1	2
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	....	....	1	....	....	....	1	..	..	..	1	..	..	..	..	..	..	..	..
33. Diabetes	2	....	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	1	..	..	..	..	..	1	..	..
34. Anæmia, leukæmia	8	....	..	..	..	..	..	1	..	1	1	5	..	..	..	..	..	4	4	....	7	1	....	4	3	1	1	..	..	..	..	1	1	2	2	1	..	..
35. Alcoholism	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	....	....	2	....	....	1	1	....	..	..	..	..	1	..	..	..	..	1	..	..

BRANTFORD.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	43	9	4	2	..	..	1	..	1	1	..	4	3	8	5	5	..	20	23	....	23	15	5	21	21	1	6	1	4	8	4	2	3	3	3	2	5	2
39. Meningitis	10	4	2	1	..	..	1	..	..	1	..	1	..	..	..	..	..	4	6	....	8	1	1	9	1	...	3	..	..	3	1	1	..	..	..	1	..	1
42. Apoplexy	20	....	..	..	..	..	..	..	1	..	..	1	3	8	4	3	..	9	11	....	5	12	3	3	16	1	2	..	3	3	2	1	2	2	2	1	2	..
44. Paralysis	4	....	..	..	..	..	..	..	..	..	..	1	..	..	1	2	..	2	2	....	2	2	....	1	3	....	1	..	..	..	..	..	1	..	..	..	1	1
49. Convulsions	8	5	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	5	3	....	7	....	1	7	1	....	..	1	1	1	1	..	..	1	1	..	2	..
51. Other diseases of nervous system	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	26	....	..	..	..	..	..	..	..	3	2	5	4	5	3	2	2	17	9	....	15	6	5	4	22	....	2	1	1	3	5	1	..	2	3	3	1	4
54. Heart disease	19	....	..	..	..	..	..	..	..	3	2	4	3	4	1	1	1	13	6	....	12	4	3	3	16	....	2	1	1	2	5	..	..	2	2	1	1	2
56. Diseases of arteries	6	....	..	..	..	..	..	..	..	..	..	..	1	1	2	1	1	4	2	....	3	1	2	1	5	....	..	..	..	1	..	1	..	..	..	2	..	2
58. Diseases of veins	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	45	8	2	2	2	..	2	..	1	..	2	6	2	9	6	1	2	22	23	....	30	9	6	20	25	....	4	12	6	3	3	2	1	1	1	4	5	3
62. Diseases of the thyroid body	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
63. Acute bronchitis	3	2	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	3	....	....	2	....	1	2	1	....	..	2	1	..	..	..	..	..	..	..	..	..
64. Chronic bronchitis	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	....	....	2	....	1	1	....	1	1	..	..	..	..	..	..	..	..	..	..
65. Broncho-pneumonia	8	2	2	1	1	..	..	..	..	..	..	1	..	1	..	..	..	2	6	....	7	1	....	6	2	....	1	1	2	1	..	1	..	..	..	..	1	1
66. Pneumonia	25	4	..	1	1	..	2	..	1	..	2	4	1	5	3	..	1	13	12	....	19	1	5	10	15	..	2	8	3	..	3	1	1	..	..	4	2	1
68. Congestion of lungs	3	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	2	....	1	2	....	1	2	....	..	..	..	..	..	..	..	..	1	..	2	..
70. Asthma and Emphysema	3	....	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	2	1	....	1	2	....	....	3	....	..	..	..	1	..	..	..	1	..	..	..	1
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	38	19	2	..	..	..	..	1	1	2	2	2	2	1	4	1	1	25	13	....	28	7	3	28	9	1	3	3	2	2	3	3	3	5	8	3	2	1
73. Diseases of mouth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	...	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
77. Gastritis	6	5	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	6	....	....	6	....	....	6	....	....	..	..	..	..	1	1	1	1	..	1	..
80. Diarrhœa and enteritis (under 2 years)	14	12	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	4	....	12	2	....	14	....	....	..	..	..	1	..	..	..	4	7	1	..	1
83. Obstruction of intestines	8	1	..	..	..	..	..	..	..	..	..	2	..	..	3	1	1	4	4	....	4	3	1	3	5	....	2	2	..	1	1	1	..	..	..	..	..	1	..
84. Other diseases of intestines	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
87. Cirrhosis of liver	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
89. Other diseases of liver	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	1	....	1	....	1	....	2	....	..	..	..	..	1	..	1	..	..	..	..	..
91. Peritonitis (non-puerperal)	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	....	1	....	....	1	..	..	..	..	..	..	1	..	..	..	..	..
92. Appendicitis	4	....	..	..	..	..	..	1	1	1	1	..	..	..	..	..	..	3	1	....	4	....	....	4	....	....	..	1	2	..	..	1	..	..	..	..	..	..

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CAUSES OF DEATHS BY CITIES—CHATHAM, 1907.

Causes of Death.	Total.	Ages.															Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																		
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Male.	Female.	Not stated.	Canadian.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																				
(*A. Epidemic Diseases.*)																																				
Grand Total	**209**	**41**	**7**	**5**	**1**	**2**	**7**	**1**	**6**	**21**	**13**	**11**	**17**	**23**	**23**	**28**	**2**	**116**	**92**	....	**140**	**67**	**1**	**105**	**100**	**3**	**24**	**22**	**14**	**27**	**19**	**12**	**12**	**12**	**27**	**17**	**8**	**14**
Group Total	19	2	4	3	..	1	3	..	..	2	2	1	..	..	1	..	..	14	5	....	19	....	....	18	1	....	..	1	..	2	2	1	1	5	4	2	..	1
1. Typhoid Fever	5	....	..	..	..	..	1	..	..	2	1	1	..	..	..	..	..	2	3	....	5	....	....	4	1	....	..	..	..	..	1	1	..	1	1	1	..	.
6. Whooping Cough	2	....	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	1	..	..	..	..	..	..	1	..	..	..
7. Diphtheria and Croup	4	....	..	1	..	1	2	..	..	..	..	..	..	..	..	..	..	4	....	....	4	....	....	4	....	....	..	..	..	2	1	..	..	1	..	..	..	..
9. Dysentery	8	2	2	2	..	..	..	..	..	..	1	..	..	..	1	..	..	6	2	....	8	....	....	8	....	....	..	..	..	..	..	..	1	3	2	1	..	1
(*B. Other General Diseases*).																																				
Group Total	30	....	..	1	..	..	1	..	2	9	2	1	3	7	3	1	..	14	16	....	25	5	....	16	14	....	2	2	2	6	3	3	2	1	4	2	1	2
12. Septicæmia	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
13. Tuberculosis of lungs	8	....	..	..	..	..	..	..	1	4	1	..	..	2	..	..	..	4	4	....	8	....	....	6	2	....	2	..	..	..	3	..	..	1	..	1	..	1
15. Tuberculous meningitis	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
21. General Tuberculosis	5	....	..	..	..	..	..	1	2	1	..	1	..	..	..	..	..	2	3	....	5	....	....	4	1	....	.	..	..	3	..	1	..	..	1	..	..	..
25. Cancer of stomach and liver	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	....	....	1	1	....	1	1	....	..	..	..	1	..	..	1	..	..	..	..	..
30. Cancer of other unspecified organs	7	....	..	..	..	..	..	..	..	1	..	1	1	3	1	..	..	3	4	....	6	1	....	1	6	....	..	1	..	..	..	1	..	..	3	..	1	1
31. Tumors	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	....	2	..	1	1	....	....	2	....	..	..	2	..	..	..	..	..	..	..	..	..
32. Rheumatism	2	....	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1	1	....	1	1	....	2	....	....	..	..	..	1	..	1	..	..	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	.	2	....	....	2	....	....	1	1	....	..	1	..	..	..	..	1	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																				
Group Total	17	1	1	..	..	..	2	..	..	1	..	..	1	3	3	4	1	11	6	....	7	10	....	5	11	1	2	1	2	1	3	..	3	..	2	1	..	2
39. Meningitis	2	...	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	1	..	1	..	..	..	..
42. Apoplexy	3	....	.	..	..	..	..	..	..	..	..	..	1	..	..	1	1	2	1	....	2	1	....	....	3	....	..	1	..	..	1	..	..	..	..	1	.	..
44. Paralysis	9	....	..	..	..	..	..	..	..	1	..	..	..	3	2	3	..	7	2	....	2	7	....	1	7	1	2	..	2	1	1	..	..	2	..	..	..	1
49. Convulsions	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	2	....	1	1	....	1	1	....	..	..	..	..	..	1	..	..	..	..	..	1
51. Other diseases of nervous system	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..

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CHATHAM.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
119. XII. OLD AGE.																																						
Group Total	13	....	..	..	..	..	..	..	..	..	..	..	..	..	4	9	..	6	7	....	2	10	1	2	11	....	2	4	..	..	1	..	2	..	..	3	1	..
XIII.—VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	11	2	..	..	..	1	1	..	1	1	..	1	..	..	3	1	..	7	4	....	8	3	....	6	5	....	1	..	2	..	..	1	..	1	1	3	..	2
123. Physical phenomena	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	1	..	..	..	..	..	..	..	..	..
124. Drowning	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	..	1	....	..	1	....	..	..	..	..	..	1	..	..	..	..	..	..
126. Other accidental poisonings	4	1	..	..	..	..	1	..	..	..	..	..	..	..	2	..	..	1	3	....	2	2	....	2	2	....	..	..	1	..	..	..	..	..	..	2	..	1
127. Other accidental traumatisms	3	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	3	..	....	3	..	....	2	1	....	..	..	..	..	..	..	1	1	1	..	..
128. Injuries at birth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	1	..	..	..	..	..	..	..	..	..	..	..
129. Homicide	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	..	1	....	..	1	....	..	..	..	..	..	..	..	..	..	..	..	1
XIV. ILL-DEFINED DISEASES																																						
Group Total	21	2	..	..	..	..	..	..	..	1	2	2	4	3	1	6	..	14	7	....	11	10	....	6	15	....	2	4	2	4	1	2	..	1	3	1	..	1
130. Dropsy	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	2	..	....	..	2	....	1	1	....	..	1	..	..	..	..	..	..	..	..	..	1
131. Heart failure	15	..	..	..	..	..	..	..	..	1	2	1	3	2	1	5	..	10	5	....	8	7	....	2	13	....	1	2	2	4	1	2	..	1	2	..	..	..
132. Other ill-defined causes	3	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	1	....	2	1	....	2	1	....	1	1	..	..	..	..	..	..	..	1	..	..
133. Unknown causes	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	1	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	15	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	6	....	15	..	..	15	..	..	4	1	..	3	..	..	.	2	2	..	1	2

CAUSES OF DEATHS BY CITIES—FORT WILLIAM, 1907.

Causes of Death.	Total.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Month. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES. (*A. Epidemic Diseases.*)																																						
Grand Total	229	75	15	3	3	2	7	2	6	39	32	18	11	10	5	2	..	153	76	....	149	67	13	155	62	12	19	14	17	15	17	17	17	36	26	17	17	17
Group Total	18	4	1	1	2	..	..	..	1	4	4	..	1	..	..	..	..	13	5	....	10	8	....	13	4	1	1	..	1	2	2	2	1	5	3	..	..	1
1. Typhoid Fever	8	..	..	..	..	..	..	..	..	4	4	..	..	..	..	..	..	7	1	....	..	8	....	4	3	1	..	..	..	..	..	2	..	..	3	2	..	..	1
4. Measles	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	1	..	..	..	..	..	..	..

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FORT WILLIAM.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	2	....	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	1	..	..	..	..	..	..	1
95. Bright's disease	2	....	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	1	..	..	..	..	..	..	1
VII. THE PUERPERAL STATE.																																						
Group Total	4	....	..	..	..	..	..	..	..	1	2	1	..	..	..	..	..	....	4	....	2	2	....	....	4	....	2	..	..	..	..	1	..	..	..	1	..	..
106. Puerperal septicæmia	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	2	..	..	..	..	..	..	..	..	..	..	..
108. Other causes incident to childbirth	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	....	2	....	....	2	....	....	2	....	..	..	..	..	..	1	..	..	..	1	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
112. Other diseases of skin	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
IX. DISEASES OF LOCOMOTOR SYSTEM																																						
Group Total	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
113. Diseases of the bones	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	18	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	8	....	18	....	....	18	....	....	1	..	1	..	4	2	3	1	..	5	1	..
117. Premature birth	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	5	....	7	....	....	7	....	....	1	..	..	..	.	1	2	1	..	2	..	..
118. Congenital debility	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	3	....	11	....	....	11	....	....	..	..	1	..	4	1	1	..	..	3	1	..
119. XII. OLD AGE.																																						
Group Total	6	....	..	..	..	..	..	..	..	..	..	..	..	2	3	1	..	4	2	....	2	3	1	1	5	....	..	..	..	..	..	..	..	1	1	..	1	3
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	56	....	..	..	..	..	3	2	2	24	15	7	3	..	..	..	..	52	4	...	19	27	10	28	17	11	9	4	3	1	4	5	9	6	7	2	3	3
121. Fractures and dislocations	9	....	..	..	..	..	2	..	..	2	3	1	1	..	.	..	..	9	....	....	2	3	4	3	3	3	1	..	..	..	1	..	2	2	3	..	..	..
123. Physical phenomena	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	....	....	....	2	....	....	1	1	..	..	..	..	..	..	..	1	..	..	1	..
124. Drowning	11	....	..	..	..	..	1	..	..	7	2	1	..	..	..	..	..	9	2	....	4	6	1	9	1	1	..	..	1	1	..	1	6	1	1	..	..	..
126. Other accidental poisonings	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	....	....	2	....	....	....	2	....	2	..	..	..	..	..	..	..	..	..	..	..
127. Other accidental traumatisms	32	....	..	..	..	..	2	2	13	8	5	2	..	..	..	..	..	30	2	....	11	16	5	16	10	6	6	4	2	..	3	4	1	2	3	2	2	3
XIV. ILL-DEFINED DISEASES.																																						
Group Total	16	4	2	..	1	..	1	..	1	1	..	2	3	1	..	..	..	11	5	....	12	4	...	11	5	....	..	..	..	1	..	4	..	2	..	3	5	1
131. Heart failure	13	4	2	..	1	..	1	..	..	1	..	2	1	1	..	..	..	9	4	....	10	3	....	9	4	....	..	..	..	1	..	3	..	2	..	1	5	1
132. Other ill-defined causes	3	....	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	2	1	....	2	1	....	2	1	....	..	..	..	..	..	1	..	..	..	2	..	..
134. XV. STILL BIRTHS.																																						
Group Total	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	3	....	8	....	....	8	....	....	..	1	..	..	..	..	..	1	..	3	..	3

CAUSES OF DEATHS BY CITIES—GUELPH, 1907.

Causes of Death	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.	1	2.	3.	4.																															
Number of Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(A. *Epidemic Diseases*).																																					
Grand Total	194	33	6	4	..	1	2	1	6	13	10	18	20	25	30	25	..	97	97	....	120	72	2	76	113	5	23	18	23	19	20	11	10	18	13	19	5	15
Group Total	7	2	..	..	..	..	..	..	..	1	..	..	..	1	..	3	..	4	3	....	2	5	..	3	4	....	1	..	4	2	..	..	..	..	..	..	..	..
5. Scarlet fever	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	...	1	1	....	2	....	..	..	2	..	..	..	..	..	..	..	..	..	..
6. Whooping cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
8. Influenza	3	....	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	1	2	....	....	3	....	....	3	....	1	..	2	..	..	..	..	..	..	..	..	..
10. Erysipelas	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases*).																																					
Group Total	41	1	..	..	..	..	..	1	1	8	5	10	8	7	2	1	..	20	24	...	29	15	....	13	28	3	3	5	6	5	3	3	1	5	2	5	2	4
12. Septicæmia	5	....	..	..	..	..	..	1	..	..	1	1	1	..	1	..	..	3	2	....	4	1	....	3	2	....	2	1	..	..	1	1	..	..	..	..	..	..
13. Tuberculosis of lungs	13	....	..	..	..	..	..	1	5	3	2	2	..	..	..	..	..	4	9	....	11	2	....	5	7	1	1	1	1	1	..	1	1	1	..	3	1	2
16. Abdominal tuberculosis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
21. General tuberculosis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
25. Cancer of stomach and liver	5	....	..	..	..	..	..	..	..	..	..	..	4	1	..	..	..	2	3	....	1	4	....	....	5	....	..	..	1	1	1	..	..	..	1	..	..	1
26. Cancer of intestines	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
27. Cancer of genital organs	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	....	2	....	1	1	....	....	2	....	..	1	..	..	..	..	..	1	..	..	..	..
28. Cancer of breast	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	1	1	....	....	2	....	..	1	..	..	..	..	..	..	..	..	..	1
30. Cancer of other unspecified organs	5	....	..	..	..	..	..	..	..	1	..	..	3	1	..	..	..	3	2	....	3	2	....	2	2	1	..	..	2	..	1	..	..	..	1	..	1	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
33. Diabetes	2	....	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	1	....	1	1	....	....	2	....	..	..	..	1	..	..	..	..	1	..	..	..
34. Anæmia, leukæmia	5	....	..	..	..	..	..	..	..	1	..	3	1	..	..	..	..	3	2	....	3	2	..	1	3	1	..	..	..	2	..	1	..	1	..	1	..	..
37. Other general diseases	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	18	2	1	..	..	..	1	..	1	..	..	..	1	5	4	3	..	13	5	....	8	8	2	8	10	....	1	2	3	1	2	1	1	2	2	1	..	2
39. Meningitis	3	1	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	3	....	...	2	1	....	3	....	....	..	1	..	..	..	1	1	..	..	..	..	..
42. Apoplexy	9	....	..	..	..	..	..	..	..	..	..	..	1	3	3	2	..	6	3	....	2	6	1	2	7	....	1	1	1	..	1	..	..	1	2	1	..	1
44. Paralysis	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	3	....	....	1	1	1	....	3	....	..	..	..	1	1	..	..	..	..	..	..	1
47. Other diseases of brain	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
48. Epilepsy	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
49. Convulsions	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..

GUELPH.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	19	....	..	..	..	1	1	..	..	..	1	2	1	1	8	4	..	7	12	....	8	11	....	1	18	....	..	3	..	..	3	2	2	2	2	1	1	3
54. Heart disease	9	....	..	..	..	..	1	..	..	..	..	2	1	1	2	2	..	4	5	....	4	5	....	....	9	....	..	2	..	..	2	1	1	1	..	..	..	2
55. Angina pectoris	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	....	....	..	..	..	..	..	..	..	..	1	..	..	..
56. Diseases of arteries	6	....	..	..	..	..	..	..	..	..	..	..	..	..	5	1	..	2	4	....	1	5	....	....	6	....	..	..	..	..	1	1	1	1	..	..	1
57. Embolism and thrombosis	3	....	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	....	3	....	3	....	..	1	2	....	..	1	..	..	..	..	..	..	..	1	1	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	30	1	3	2	..	..	..	..	1	..	..	1	5	8	8	1	..	17	13	....	17	13	....	9	19	2	6	3	4	8	3	1	2	..	..	2	..	1
63. Acute bronchitis	2	....	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	1	..	1	.	..	..	..
65. Broncho-pneumonia	6	....	1	1	..	..	..	..	..	..	..	..	1	2	1	..	..	2	4	....	4	2	....	2	4	....	2	2	..	..	1	..	..	..	..	1	..	..
66. Pneumonia	20	1	1	..	..	..	..	..	1	..	..	..	3	6	7	1	..	15	5	....	10	10	...	4	14	2	4	1	4	7	1	1	1	..	..	1	..	..
68. Congestion of lungs	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
72. Other diseases respiratory system, phthisis excepted	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	11	4	2	..	..	..	..	..	1	1	1	..	1	..	1	..	..	6	5	....	9	2	....	8	3	....	1	..	2	..	..	.	2	4	2	..	..	..
77. Gastritis	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
80. Diarrhœa and enteritis, (under 2 years)	5	4	1	..	..	..	.	..	..	..	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	..	..	..	..	..	..	..	3	2	..	..	..
81. Diarrhœa and enteritis, (2 years and over)	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
85. Acute yellow atrophy of liver	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
92. Appendicitis	3	....	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	2	1	....	3	....	....	1	2	....	..	..	1	..	..	1	..	1	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	11	....	..	..	..	..	.	..	1	..	1	2	2	1	4	..	..	4	7	....	7	4	....	2	9	....	1	2	..	2	2	..	1	1	..	..	1
95. Bright's disease	10	....	..	..	..	..	..	..	1	..	..	2	2	1	4	..	..	4	6	....	6	4	....	2	8	...	1	2	..	1	2	.	1	1	1	..	..	1
101. Other diseases of uterus	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	...	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
VIII.—DISEASES OF SKIN.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	...	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	1	..	..	..	..	..	..	1	..	..	..
116. Congenital malformations (still-births excluded)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	1	..	..	..	..	..	..	1	..	..	..
XI. EARLY INFANCY.																																						
Group Total	12	12		..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	6	....	12	....	....	12	....	....	..	1	1	..	..	2	..	1	1	5	..	1
117. Premature birth	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	....	7	....	....	7	....	....	..	..	..	..	..	2	..	1	..	4	..	..
118. Congenital debility	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	..	1	1	..	..	..	..	..	1	1	..	1

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HAMILTON.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	125	2	2	1	..	2	2	2	6	23	20	16	20	14	12	1	2	50	75	....	78	43	4	48	69	8	8	11	11	10	16	15	16	6	12	7	6	7
12. Septicæmia	5	....	..	..	..	..	..	..	1	1	1	..	..	1	1	..	..	3	2	....	2	2	1	1	3	1	1	1	..	..	1	1	..	..	..	..	..	..	1
13. Tuberculosis of lungs	35	....	..	..	..	..	..	2	4	15	6	5	2	..	..	..	1	15	20	....	28	7	....	21	14	....	4	1	5	4	3	3	4	2	3	2	3	1
15. Tuberculous meningitis	7	....	2	1	..	2	1	..	.	1	..	..	..	..	..	..	..	3	4	....	7	....	....	7	....	....	..	1	1	1	1	..	1	..	1	..	..	1
16. Abdominal tuberculosis	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	....	1	1	....	1	1	....	..	1	..	1	..	..	..	..	..	..	..	..
19. White swelling	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
21. General tuberculosis	11	....	..	..	..	..	..	..	1	2	5	1	1	1	..	..	..	6	5	....	7	4	....	4	4	3	..	2	..	..	5	2	..	..	2	..	..	..
23. Venereal Diseases	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
24. Cancer of mouth	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	2	1	....	....	2	1	1	2	....	..	..	1	..	..	..	1	..	..	1	..	..
25. Cancer of stomach and liver	14	....	..	..	..	..	..	..	..	2	1	5	3	3	..	..	..	7	7	....	6	8	....	2	12	....	..	1	2	1	1	3	1	..	1	2	..	2
26. Cancer of intestines	2	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	....	....	2	....	....	2	..	..	..	..	..	..	..	..	..	..	1	1	..
27. Cancer of genital organs	4	....	..	..	..	..	..	..	..	1	2	..	1	..	..	..	..	....	4	....	1	3	....	....	3	1	..	1	..	1	1	1	..	..	..	..	..	..
28. Cancer of breast	2	....	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	....	2	....	1	1	....	....	2	....	..	..	..	..	..	1	1	..	..	..	..	..
29. Cancer of skin	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	....	....	1	1	....	....	2	....	1	..	..	..	..	..	1	..	..	..	..	..
30. Cancer of other unspecified organs	16	....	..	..	..	..	..	..	..	2	1	2	5	4	1	1	..	3	13	....	7	7	2	1	14	1	1	2	1	..	..	2	4	1	3	..	1	1
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
33. Diabetes	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	..	1	..	..	1	..	..
34. Anæmia, leukæmia	9	1	..	..	..	1	..	..	3	..	1	2	1	..	..	..	..	4	5	....	8	1	....	5	4	....	..	..	1	1	3	..	1	1	1	..	..	1
35. Alcoholism	4	....	..	..	..	..	..	..	..	..	1	1	2	..	..	..	..	1	3	....	3	1	....	2	1	1	..	..	..	1	..	2	1	..	..	..	..	..
37. Other general diseases	3	....	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	1	2	....	2	1	....	....	2	1	1	..	..	..	1	..	..	..	..	1	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	103	16	5	3	3	1	3	2	..	4	4	18	9	11	18	5	1	52	51	....	61	40	2	41	53	9	6	10	7	13	7	10	13	4	11	3	10	9
39. Meningitis	21	5	5	3	1	..	2	1	..	..	1	2	..	1	..	..	..	10	11	....	20	1	....	17	2	2	2	..	..	3	2	2	3	2	3	..	2	2
40. Locomotor ataxia	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	....	....	....	2	....	....	1	1	..	1	..	..	..	..	..	..	..	..	1	..
41. Other diseases of spinal cord	2	....	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	2	....	....	2	....	....	....	2	....	..	2	..	..	..	..	..	..	..	..	..	..
42. Apoplexy	28	....	..	..	..	..	1	..	..	1	..	6	5	7	4	3	1	13	15	....	9	18	1	3	22	3	3	2	..	4	3	2	3	..	5	..	4	2
44. Paralysis	27	....	..	..	..	..	..	..	..	..	2	6	2	2	13	2	..	11	16	....	13	14	....	4	22	1	..	3	4	2	2	2	7	1	2	1	1	2
46. Other forms of mental disease	3	....	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..	1	2	....	....	2	1	1	2	....	..	..	1	1	..	..	..	..	..	1	..	..
47. Other diseases of brain	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
48. Epilepsy	2	....	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	1	..	..	..	..	..	..	1	..
49. Convulsions	13	10	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	8	5	....	12	1	....	11	1	1	1	1	2	2	..	2	..	1	..	1	..	3
50. Tetanus	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	1	....	2	....	....	....	1	1	..	..	..	..	..	..	1	..	..	..	1	..
51. Other diseases of nervous system	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2	....	....	1	1	....	2	....	....	..	1	..	..	..	1	..	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	80	8	..	..	..	..	1	..	4	3	6	5	14	19	14	5	1	37	43	....	48	30	2	22	50	8	3	2	10	8	9	10	10	4	4	11	2	7
52. Pericarditis	2	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	1	..	..	1	..	..	..	..	..	..
53. Endocarditis	7	....	..	..	..	..	..	2	1	..	..	3	..	..	..	1	..	6	1	....	3	4	....	3	4	....	1	..	1	..	2	2	..	..	1	..	..
54. Heart disease	49	4	..	..	..	1	..	2	1	5	3	8	12	10	3	..	..	22	27	....	30	17	2	13	30	6	2	1	2	7	6	7	5	2	4	7	1	5
55. Angina pectoris	3	....	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	2	1	....	1	2	....	....	3	....	..	..	..	..	1	..	1	..	..	1	..	..
56. Diseases of arteries	11	....	..	..	..	..	..	..	..	..	..	1	1	4	4	1	..	6	5	....	5	6	....	1	9	1	..	1	3	..	1	..	2	1	..	..	1	2
57. Embolism and thrombosis	2	....	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	....	1	1	....	....	1	1	..	..	2	..	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	6	3	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	6	....	6	....	....	4	2	....	..	..	1	1	1	..	..	1	..	2	..	..

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Number of column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
IX. DISEASES OF LOCOMOTOR SYSTEM.																																						
Group Total	3	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	2	....	2	1	....	2	1	....	1	..	..	..	..	1	..	..	..	1	..	..
113. Diseases of the bones	3	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	2	....	2	1	....	2	1	..	1	..	..	..	..	1	..	..	..	1	..	..
X. MALFORMATIONS.																																						
Group Total	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	1	..	1	..	1	..	..	..	..	..
116. Congenital malformations (still-births excluded)	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	1	..	1	..	1	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	76	76	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44	31	1	76	....	....	76	....	....	8	5	3	10	4	8	8	8	5	6	4	7
117. Premature birth	42	42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	18	1	42	....	....	42	....	....	6	1	..	6	..	7	5	4	1	2	2	5
118. Congenital debility	34	34	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	13	....	34	....	....	31	....	....	2	1	3	4	4	1	3	4	4	4	2	2
119. XII. OLD AGE.																																						
Group Total	58	....	..	..	..	..	..	..	..	..	..	..	..	3	21	33	1	23	35	....	9	48	1	4	46	8	8	1	6	6	6	5	6	5	9	2	1	3
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	45	4	2	..	..	1	2	1	..	12	6	8	1	1	4	1	2	38	7	....	24	14	7	22	14	9	1	6	9	4	4	2	5	3	5	5	1	..
121. Fractures and dislocations	7	....	..	..	..	..	1	..	..	1	1	..	..	..	2	1	1	4	3	....	2	3	2	3	2	2	..	1	..	..	3	..	2	..	..	1	..	..
122. Burns and scalds	3	....	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	..	2	..	..	..	..	..	1	..	..	..
124. Drowning	4	....	1	..	..	..	..	1	..	1	1	..	..	..	..	..	..	3	1	....	4	....	....	3	1	....	..	1	..	..	..	1	1	..	..	1	..	..
125. Inhalation of poisonous gases	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
127. Other accidental traumatisms	26	....	..	..	..	..	..	..	..	10	4	8	1	..	2	..	1	25	1	....	10	11	5	9	10	7	..	3	7	4	1	..	2	3	3	2	1	..
128. Injuries at birth	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	....	....	3	....	....	3	....	....	..	..	..	..	..	1	..	..	1	1	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	46	11	4	..	1	..	..	..	1	3	1	4	5	7	7	1	1	21	25	....	26	18	2	18	24	4	4	4	5	3	4	4	2	7	6	1	2	4
130. Dropsy	3	....	..	..	..	..	..	..	..	..	..	1	1	..	1	..	..	1	2	....	1	2	....	....	3	....	1	..	1	..	..	1	..	..	..	..	..	..
131. Heart failure	19	....	..	..	..	..	..	1	1	..	2	3	5	6	1	..	..	11	8	....	8	10	1	1	15	3	3	1	2	1	1	1	5	..	1	1	2
132. Other ill-defined causes	22	11	4	..	1	..	..	..	..	2	1	..	1	2	..	..	..	7	15	....	17	5	....	17	5	....	..	3	2	2	2	2	..	2	6	..	1	2
133. Unknown causes	2	....	.	..	..	..	..	..	..	..	..	1	..	..	..	..	1	2	....	....	....	1	1	....	1	1	..	..	..	..	1	..	1	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	86	86	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42	36	8	86	....	....	86	....	....	5	6	8	9	8	9	6	9	7	7	8	4

CAUSES OF DEATHS BY CITIES—KINGSTON 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1.—GENERAL DISEASES.																																					
(A. Epidemic Diseases.)																																					
Grand Total	398	77	9	1	2	2	11	10	11	29	27	32	38	38	60	44	7	208	190	....	273	124	1	186	192	20	42	34	41	24	31	32	26	34	41	25	39	29
Group Total	12	1	..	..	1	..	2	..	..	2	3	..	2	..	..	1	..	7	5	....	8	4	....	7	3	2	1	..	1	1	..	1	1	..	3	..	2	2
1. Typhoid Fever	5	....	..	..	..	..	..	..	..	2	3	..	..	..	..	..	..	4	1	....	3	2	....	3	1	1	..	..	..	..	..	..	1	..	2	..	1	1
2. Malarial Fever	1	....	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
4. Measles	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
5. Scarlet Fever	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
6. Whooping Cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
7. Diphtheria and Croup	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
8. Influenza	2	....	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	....	1	1	....	....	1	1	1	..	1	..	..	..	..	..	..	..	..	..
(B. Other General Diseases.)																																					
Group Total	78	2	1	..	..	..	1	3	8	12	11	13	12	5	8	1	1	33	45	....	62	16	...	35	43	....	1	7	11	4	7	6	7	6	7	4	8	7
12. Septicæmia	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	....	2	...	2	....	....	1	1	...	..	..	..	1	..	..	..	..	..	..	..	1
13. Tuberculosis of lungs	13	....	..	..	..	..	1	3	4	1	3	1	..	..	..	..	..	5	8	....	12	1	....	10	3	....	..	..	2	1	1	3	3	1	..	..	1	1
14. Tuberculosis of larynx	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
15. Tuberculous meningitis	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
16. Abdominal tuberculosis	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
19. White swelling	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
20. Tuberculosis of other organs	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
21. General tuberculosis	22	2	1	..	..	..	..	1	1	7	5	2	3	..	..	..	..	10	12	....	18	4	....	10	12	....	2	2	2	..	2	1	..	3	2	3	2
23. Venereal diseases	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
24. Cancer of mouth	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
25. Cancer of stomach and liver	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	....	2	....	....	2	....	....	2	....	..	..	..	1	..	..	..	..	..	1	..	..
27. Cancer of genital organs	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	16	....	..	..	..	..	..	..	..	2	..	1	4	4	..	4	1	7	9	....	10	6	....	5	11	....	2	3	..	2	..	1	3	1	..	..	2	2
31. Tumors	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	1	..	..	..	..	..	..	..	1
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
33. Diabetes	6	....	..	..	..	..	..	1	..	..	2	..	1	..	1	1	..	4	2	....	6	....	....	..	2	4	..	..	..	1	..	1	1	..	..	1	1	..
34. Anæmia, leukæmia	5	....	..	..	..	..	..	..	1	..	..	..	2	1	1	..	..	3	2	....	4	1	....	..	1	4	....	..	1	2	..	..	..	1	..	1	..	..

KINGSTON.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	64	3	2	..	..	2	2	3	1	3	5	2	7	7	19	8	..	34	30	....	35	29	....	20	40	4	6	6	4	11	5	6	5	6	4	3	5	3
39. Meningitis	6	1	..	..	..	1	1	2	..	1	..	..	..	..	..	..	..	5	1	....	6	....	....	5	1	....	..	..	..	2	1	..	1	..	..	2	..	..
42. Apoplexy	10	....	..	..	..	..	..	..	..	1	..	1	2	1	4	1	..	6	4	....	6	4	....	2	7	1	..	1	2	2	..	1	1	.	1	1	1	..
44. Paralysis	35	....	1	..	..	..	1	..	..	..	1	1	4	5	15	7	..	19	16	....	12	23	....	4	28	3	5	1	2	6	3	3	1	4	3	..	4	3
46. Other forms of mental disease	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..
47. Other diseases of brain	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
48. Epilepsy	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
49. Convulsions	6	2	1	..	..	1	..	..	1	1	..	..	..	..	..	..	..	1	5	....	6	....	....	5	1	....	1	1	..	..	..	..	2	2	..	..	..	..
51. Other diseases of nervous system	4	....	..	..	..	..	1	..	..	1	..	1	..	1	1	..	..	2	2	....	3	1	....	2	2	....	..	2	..	1	1	..	..	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	25	....	..	..	1	..	..	..	1	..	1	4	4	7	6	1	..	11	14	....	16	8	1	7	17	1	3	4	4	..	3	3	1	1	1	3	1
52. Pericarditis	1	....	.	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
54. Heart disease	22	....	..	..	1	..	..	..	..	..	1	3	4	6	6	1	..	8	14	....	15	6	1	6	15	1	3	4	4	..	3	2	1	1	1	2	1
56. Diseases of arteries	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	37	10	3	..	..	..	..	..	..	2	..	4	3	3	7	3	2	21	16	....	25	12	....	21	12	4	8	2	7	1	2	3	1	3	2	3	4	1
64. Chronic bronchitis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
65. Broncho-pneumonia	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
66. Pneumonia	33	10	2	..	..	..	..	..	..	2	..	4	3	3	5	2	2	19	14	....	24	9	....	19	10	4	7	2	6	1	2	3	1	2	2	4	1
67. Pleurisy	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
68. Congestion of lungs	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	32	15	3	..	..	..	2	2	..	3	1	2	2	1	..	..	1	15	17	....	28	4	....	25	5	2	1	1	1	..	..	1	2	2	15	4	3	2
77. Gastritis	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	1	....	2	1	....	2	1	....	..	..	..	..	..	..	..	..	1	..	..	2
80. Diarrhœa and enteritis (under 2 years)	15	12	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	10	....	14	1	....	15	....	....	..	..	..	..	..	1	1	11	2	..	..	..
81. Diarrhœa and enteritis (2 years and over)	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
83. Obstruction of intestines	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	1	..	1	..
84. Other diseases of intestines	2	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	..	1	..	..	..	1	..	..
87. Cirrhosis of liver	3	....	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	2	1	....	3	....	....	1	....	2	..	..	..	..	..	..	1	..	1	1	..	..
91. Peritonitis, non-puerperal	4	....	..	..	..	..	..	1	..	2	..	..	1	..	..	..	..	2	2	....	3	1	....	2	2	....	..	2	..	1	1	..	..	1	..	1	..	..
92. Appendicitis	2	....	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	1	..	..	..	..	..	..	..	1	..	..	..

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Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	**677**	**139**	**20**	**6**	**1**	**5**	**7**	**3**	**15**	**68**	**46**	**41**	**61**	**85**	**102**	**72**	**6**	**353**	**323**	**1**	**424**	**251**	**2**	**293**	**380**	**4**	**63**	**55**	**67**	**64**	**68**	**47**	**66**	**62**	**43**	**49**	**39**	**54**
Group Total	18	3	1	..	..	1	2	1	1	2	2	..	1	3	..	1	..	8	10	....	10	8	....	10	8	....	4	2	4	2	..	3	2	..	1	..	..	..
1. Typhoid Fever	3	....	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	1	2	....	1	2	....	1	2	....	2	1	..	..	..	..	..	..	..	..	..	..
4. Measles	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
5. Scarlet Fever	2	....	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	1	..	..	..	1	..	..	..	..	..
6. Whooping Cough	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	2	..	..	..	..	..	..	..
7. Diphtheria and Croup	2	....	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	2	....	....	1	1	....	2	....	....	1	..	..	..	..	..	1	..	..	..	..	..
8. Influenza	3	....	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	....	3	....	1	2	....	....	3	....	1	..	1	..	..	..	..	..	..	..	..	..
9. Dysentery	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
10. Erysipelas	4	1	..	..	..	..	..	..	..	1	..	..	1	1	..	..	..	4	....	....	2	2	....	2	2	....	..	..	2	..	..	1	..	..	1	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	110	1	..	1	..	1	..	1	3	26	13	14	22	14	8	6	..	62	48	....	74	36	....	40	70	....	12	10	9	13	11	9	13	9	7	4	2	11
12. Septicæmia	11	1	..	..	..	..	..	..	..	3	1	1	2	2	1	..	..	9	2	....	8	3	....	3	8	....	4	..	1	1	2	1	..	1	1	..	..	..
13. Tuberculosis of lungs	27	....	..	..	..	..	..	..	1	13	4	6	1	1	1	..	..	10	17	....	23	4	....	14	13	....	2	2	3	5	3	3	1	4	1	1	..	2
15. Tuberculous meningitis	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	....	1	....	....	1	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
21. General Tuberculosis	20	....	..	1	..	..	..	..	2	5	4	2	3	3	..	..	..	9	11	....	15	5	....	10	10	....	2	2	3	1	1	2	3	..	2	..	..	4
25. Cancer of the stomach and liver	6	....	..	..	..	..	..	..	..	..	..	1	2	1	1	1	..	4	2	....	4	2	....	1	5	....	..	..	1	..	1	..	3	..	..	1	..	..
26. Cancer of Intestines	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	19	....	..	..	..	..	..	..	..	1	2	1	7	3	2	3	..	14	5	....	8	11	....	4	15	....	1	3	1	3	2	1	2	2	1	2	..	1
31. Tumors	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
32. Rheumatism	6	....	..	..	..	..	..	..	..	1	1	2	1	..	..	..	..	4	2	....	5	1	....	2	4	....	..	..	..	2	..	..	1	..	..	2	..	1
33. Diabetes	4	....	..	..	..	..	..	1	..	1	..	..	..	1	..	1	..	3	1	....	2	2	....	4	....	....	..	..	..	..	1	..	1	..	1	..	..	1
34. Anæmia, leukæmia	12	....	..	..	..	..	..	..	..	2	..	1	4	1	3	1	..	8	4	....	7	5	....	....	12	....	3	2	..	..	..	1	2	2	1	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	80	9	7	4	..	1	..	..	3	6	1	2	7	13	17	9	1	36	44	....	44	36	....	34	46	....	5	6	12	6	10	4	5	11	5	6	5	5
38. Encephalitis	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	....	....	1	1	....	....	2	....	..	..	1	..	1	..	..	..	..	..	..	..
39. Meningitis	14	....	5	3	..	1	..	..	1	3	..	..	..	1	..	..	..	7	7	....	13	1	....	13	1	....	..	2	4	..	..	..	1	1	2	2	2	..
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..

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LONDON—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII. THE PUERPERAL STATE.																																						
Group Total	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..
07. Puerperal convulsions	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	4	....	..	..	..	..	..	..	..	..	..	1	..	..	2	1	..	3	1	....	2	2	....	2	2	....	1	..	1	..	..	..	1	..	..	..	1	..
109. Gangrene	3	....	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	2	1	....	1	2	....	1	2	....	1	..	1	..	..	..	..	..	..	..	1	..
111. Abscess	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	3	..	7	....	....	7	....	....	2	..	2	..	..	..	1	1	..	..	..	1
116. Congenital malformations (still-births excluded)	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	3	....	7	....	....	7	....	....	2	..	2	..	..	..	1	1	..	..	..	1
XI. EARLY INFANCY.																																						
Group Total	35	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	14	....	35	....	....	35	....	....	4	..	..	2	2	5	5	5	3	3	4	2
117. Premature birth	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	3	....	12	....	....	12	....	....	1	..	..	1	..	1	3	1	..	..	4	1
118. Congenital debility	23	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	11	....	23	....	....	23	....	....	3	..	..	1	2	4	2	4	3	3	.	1
19. XII. OLD AGE.																																						
Group Total	25	....	..	..	..	..	..	..	..	..	..	..	..	4	6	15	..	14	11	....	11	14	....	2	23	....	1	3	6	3	2	2	3	..	1	..	..	4
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	37	....	..	..	1	1	1	1	1	10	7	5	4	3	3	..	..	28	9	....	21	11	2	18	18	1	1	2	3	1	4	5	8	5	..	4	2	2
121. Fractures and dislocations	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	....	....	1	1	....	1	1	....	..	..	..	..	..	1	1	..	..	..	..	..
122. Burns and scalds	4	....	..	..	1	1	..	..	..	1	1	..	..	..	..	..	..	1	3	....	2	2	....	1	2	1	..	..	..	..	..	2	..	1	..	..	1	..
123. Physical phenomena	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
124. Drowning	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
125. Inhalation of poisonous gases	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
126. Other accidental poisonings	4	....	..	..	..	..	..	..	..	2	..	..	1	1	..	..	..	2	2	....	2	2	....	4	....	....	..	..	..	..	..	1	..	1	..	..	1	1
27. Other accidental traumatisms	24	....	..	..	..	..	..	1	1	7	5	4	1	2	3	..	..	20	4	....	14	8	2	11	13	....	1	2	3	1	1	2	7	4	..	2	..	1
XIV. ILL-DEFINED DISEASES.																																						
Group Total	57	7	2	..	..	1	..	..	..	2	3	3	7	10	8	9	5	25	32	..	28	29	....	15	40	2	1	3	7	5	9	1	2	7	5	4	6	7
130. Dropsy	6	....	..	..	..	..	..	..	..	..	1	1	1	..	2	1	..	2	4	....	4	2	....	1	5	....	..	..	..	..	..	..	..	1	..	3	1	1
131. Heart failure	25	....	1	....	..	1	..	..	..	1	1	1	3	6	3	3	5	12	13	....	12	13	....	5	18	2	..	1	3	1	3	1	2	1	4	1	3	5
132. Other ill defined causes	25	7	1	..	..	..	..	..	..	1	1	1	2	4	3	5	..	11	14	....	12	13	....	9	16	....	1	2	3	4	6	..	..	5	1	..	2	1
133. Unknown causes	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	..	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
134. XV. STILL BIRTHS, **Group Total**	35	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	14	1	35	....	....	35	....	....	3	3	1	6	6	3	2	2	1	4	3	1

CAUSES OF DEATHS BY CITIES—NIAGARA FALLS, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0,1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases*).																																					
Grand Total	115	26	2	2	1	..	1	2	4	7	16	9	11	14	12	7	1	67	46	2	73	40	2	46	58	11	12	16	9	14	6	8	11	9	8	4	6	7
Group Total	4	....	1	..	..	..	..	..	..	..	2	..	1	..	..	..	..	2	2	....	4	....	....	1	2	1	1	1	..	..	..	..	..	..	..	1	..	1
1. Typhoid Fever	3	....	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	1	2	....	3	....	....	...	2	1	1	1	.	..	..	..	..	..	..	..	..	1
7. Diphtheria and Croup	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
(*B. Other General Diseases.*)																																					
Group Total	19	....	..	..	..	..	..	..	1	2	6	2	2	4	2	..	..	10	9	....	12	7	....	3	11	5	2	1	1	2	2	2	2	1	1	..	3
12. Septicæmia	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
13. Tuberculosis of lungs	5	....	..	..	..	..	..	..	..	1	3	..	..	1	..	..	..	3	2	....	4	1	....	2	2	1	2	..	..	..	..	1	1	..	..	..	..
21. General Tuberculosis	3	....	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	3	..	....	2	1	....	....	1	2	.	..	1	..	1	1	..	..	..	..	..	..
25. Cancer of stomach and liver	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	1	..	..	....	1	..	..	..	..	1	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	4	....	..	..	..	..	..	..	..	..	1	1	..	1	1	..	..	....	4	....	3	1	....	....	3	1	..	..	..	1	..	..	..	1	..	1	..	1
32. Rheumatism	4	....	..	..	..	..	..	..	..	..	1	..	1	1	1	..	..	2	2	....	....	4	....	....	3	1	..	1	..	..	1	..	..	..	1	..	1	..	1
31. Anæmia, leukæmia	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
II.—DISEASES OF NERVOUS SYSTEM.																																					
Group Total	15	5	1	1	..	..	1	..	..	..	..	1	1	2	1	2	..	10	5	...	8	6	1	7	6	2	1	1	2	3	1	1	2	1	..	1	..	2
38. Encephalitis	2	....	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	1	....	1	1	....	1	....	1	..	..	1	1	..	..	..	..	..	..	..	..
39. Meningitis	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	1	1	....	1	....	1	..	..	..	..	..	1	1	..	..	..	..	..
42. Apoplexy	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	....	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
44. Paralysis	5	....	..	..	..	..	..	..	..	..	..	..	1	2	1	1	..	2	3	....	1	3	1	....	5	....	1	..	..	..	..	..	1	..	..	1	..	2
49. Convulsions	5	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	....	....	5	....	....	5	....	....	..	1	..	2	1	..	..	1	..	..	..	..
III.—DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	4	....	..	..	..	..	..	..	..	1	1	..	2	..	..	..	..	1	3	....	3	1	....	....	4	....	..	..	..	1	..	..	..	2	..	..	..	1
53. Endocarditis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
54. Heart disease	2	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	..	..	..	..	1	..	..	..	1
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..

NIAGARA FALLS.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
IV.—DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	11	4	..	..	..	..	..	1	..	1	..	1	..	1	1	2	..	5	6	....	7	4	....	6	5	....	1	5	1	1	..	..	1	..	..	..	1	1
63. Acute bronchitis	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	....	2	..	....	1	1	....	..	1	..	..	..	..	1	..	..	..	..	..
66. Pneumonia	8	3	..	..	..	..	1	..	1	..	1	..	..	..	..	2	..	3	5	....	5	3	....	5	3	....	1	4	1	..	..	..	..	..	..	..	1	1
67. Pleurisy	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	...	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
V.—DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	9	1	..	1	..	..	..	..	1	1	..	.	1	1	3	..	..	4	5	....	7	2	....	4	5	....	..	1	2	2	..	..	..	..	1	..	..	3
74. Tonsilitis	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	...	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
80. Diarrhœa and enteritis (under 2 years)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
87. Cirrhosis of liver	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	2	....	....	....	2	....	..	..	1	..	..	..	..	..	..	..	..	1
88. Biliary calculi	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
89. Other diseases of liver	2	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
92. Appendicitis	2	....	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	1	1	..	..	..	..	..	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	6	....	..	..	..	..	..	..	..	..	1	1	2	2	..	..	..	4	2	....	1	5	....	1	5	....	2	1	..	1	..	..	..	..	..	1	1	..
95. Bright's disease	5	....	..	..	..	..	..	..	..	..	1	1	1	2	..	..	..	3	2	....	1	4	....	...	5	....	2	1	..	1	..	..	..	..	..	..	1	..
96. Other diseases of kidneys	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
XI. EARLY INFANCY.																																						
Group Total	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	5	....	11	....	....	11	....	....	2	2	1	1	..	..	1	1	3	..	..	..
117. Premature birth	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	2	..	..	1	..	..	..	..	..	..	..	..
118. Congenital debility	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	..	2	1	..	..	..	1	1	3	..	..	..
119. XII. OLD AGE.																																						
Group Total	8	....	..	..	..	..	..	..	..	..	..	..	..	1	4	3	..	5	3	....	4	4	....	...	7	1	1	1	1	1	..	1	3	..	..	.	..	..
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	15	1	..	..	..	..	..	2	2	6	3	..	..	..	..	1	13	2	....	7	7	1	6	8	1	..	1	..	1	3	3	2	1	1	..	2	1
120. Suicides	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	...	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
121. Fractures and dislocations	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
123. Physical phenomena	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
124. Drowning	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	....	1	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
127. Other accidental traumatisms	11	1	..	..	..	..	..	2	1	5	2	..	..	..	..	..	..	11	....	....	5	6	....	6	4	1	..	1	..	..	3	3	..	1	..	2	1
XIV. ILL-DEFINED DISEASES.																																						
Group Total	10	1	..	..	1	..	..	1	..	..	..	1	2	3	1	..	..	7	3	....	6	4	....	4	5	1	2	1	1	1	..	..	..	1	2	..	2	..
130. Dropsy	2	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	1	..	....	2	....	1	1	....	1	1	..	..	..	..	..	..	..	..	..	..
131. Heart failure	6	....	..	..	1	..	..	..	..	..	..	1	1	2	1	..	..	4	2	....	5	1	....	2	3	1	1	..	..	1	..	..	..	..	2	..	2	..
132. Other ill-defined causes	2	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	....	....	1	1	..	1	1	....	..	..	1	..	..	..	..	1	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	2	3	....	...	3	....	...	..	1	..	..	..	..	1	..	1	..	..	..

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not Stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33	32	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	1,340	432	52	11	7	10	22	20	23	105	109	88	96	133	127	98	7	697	636	7	1,083	215	42	725	557	58	117	109	116	100	105	103	123	151	90	109	89	128
Group Total	81	19	10	2	1	2	6	6	3	10	7	8	5	1	..	..	1	45	36	....	69	10	2	57	20	4	8	6	8	4	5	2	6	15	7	6	3	11
1. Typhoid Fever	38	....	3	..	..	1	2	3	3	10	6	6	4	..	..	..	..	24	14	....	31	7	....	19	17	2	7	3	3	3	2	1	..	3	4	4	2	6
4. Measles	4	...	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	2	2	....	4	....	....	3	1	....	..	..	2	1	1	..	..	..	..	..	..	..	..
5. Scarlet Fever	2	....	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	1	..	1	..	..	..	..	..	..	..	..	..
6. Whooping Cough	4	2	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	3	1	....	4	....	....	4	....	....	..	..	..	..	1	1	..	..	..	1	..	1
7. Diphtheria and Croup	7	....	1	..	..	..	2	2	..	..	1	..	1	..	..	..	..	2	5	....	4	2	1	6	1	....	..	..	..	..	..	..	1	2	..	1	3
8. Influenza	5	1	..	..	1	..	1	..	..	..	1	..	1	..	..	..	..	3	2	....	4	....	1	3	1	1	..	2	2	..	..	..	..	..	..	..	..	1
9. Dysentery	19	16	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	10	9	....	18	1	....	19	....	....	..	..	..	..	..	6	11	1	1	..	..	..
10. Erysipelas	2	....	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	....	2	....	....	1	....	1	..	1	..	..	1	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	202	10	5	1	2	2	1	4	4	41	35	31	15	31	14	5	1	96	106	....	159	38	5	74	111	17	17	22	14	11	14	19	15	18	16	17	20	19
12. Septicæmia	10	....	1	..	..	1	1	1	..	2	1	1	..	2	..	..	..	5	5	....	7	3	....	2	7	1	..	1	2	..	1	1	1	..	2	1	..	1
13. Tuberculosis of lungs	73	....	1	..	1	1	..	1	3	21	18	14	4	6	3	..	..	35	38	....	57	14	2	29	39	5	8	10	3	5	3	8	6	6	4	8	4	8
14. Tuberculosis of Larynx	3	....	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	1	2	....	2	....	1	....	3	....	..	..	..	..	..	..	..	..	..	..	2	1	..
15. Tuberculous meningitis	3	1	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	..	....	3	..	....	3	..	....	1	1	..	..	..	..	..	..	..	..	1	..
20. Tuberculosis of other organs	10	1	..	..	..	..	..	1	..	4	3	1	..	..	..	..	..	2	8	....	8	1	1	5	5	....	..	..	3	..	2	1	..	1	1	1	..
21. General Tuberculosis	17	2	..	..	..	..	..	1	..	7	5	..	..	2	..	..	..	9	8	....	15	1	1	9	4	4	..	..	1	..	..	4	2	2	1	1	2	3
23. Venereal diseases	3	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	1	....	3	..	....	2	....	1	..	..	..	..	..	1	..	1	..	..	..	..
24. Cancer of mouth	5	....	..	..	..	..	..	..	..	..	..	2	2	1	..	..	..	3	2	....	3	2	....	1	4	....	..	1	..	..	1	..	..	1	..	2	..	..
25. Cancer of stomach and liver	18	....	..	..	..	..	..	..	..	..	..	4	2	5	4	2	1	13	5	....	13	5	....	3	14	1	3	2	1	1	..	1	1	2	2	1	1	3
26. Cancer of intestines	3	....	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	2	1	....	2	1	....	....	2	1	..	1	..	1	..	..	1	..	..	..	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
29. Cancer of skin	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
30. Cancer of other unspecified organs	22	..	..	..	..	..	..	..	1	1	1	5	4	4	3	..	..	8	11	....	17	5	....	6	14	2	..	4	2	2	3	1	1	4	1	2	2	..
32. Rheumatism	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	1	....	1	1	....	1	1	....	..	..	1	..	..	..	1	..	..	..	..	..
33. Diabetes	7	....	..	..	..	..	..	..	..	2	..	1	..	..	3	1	..	3	4	....	5	2	....	1	5	1	1	1	1	..	1	..	..	..	..	1	2
34. Anæmia, leukæmia	18	5	1	..	..	..	..	..	..	1	1	1	1	7	1	..	..	4	14	....	15	3	....	7	11	....	2	..	..	2	4	2	2	1	1	1	2	1
35. Alcoholism	3	....	..	..	..	..	..	..	..	1	1	..	..	..	..	1	..	3	..	....	3	..	....	2	....	1	..	..	..	..	..	..	..	..	..	1	..	1
37. Other general diseases	3	....	..	1	..	..	..	..	..	1	..	..	..	1	..	..	..	....	3	....	3	....	....	2	1	....	..	1	1	..	..	..	..	..	..	1	..	..

OTTAWA.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	106	10	7	2	2	3	1	3	3	5	8	9	11	16	16	9	1	52	54	....	82	21	3	40	61	5	7	8	15	5	8	10	11	7	6	7	13	9
38. Encephalitis	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	....	....	2	....	....	2	....	....	1	..	..	..	..	..	..	..	..	..	..	1	..
39. Meningitis	21	3	4	2	1	3	1	1	1	2	1	1	..	..	1	..	..	10	11	....	21	....	....	16	4	1	1	1	2	1	2	2	4	1	3	1	2	1
40. Locomotor ataxia	3	....	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	3	....	....	3	....	....	2	1	....	..	1	..	..	..	..	..	..	..	..	1	1
41. Other diseases of spinal cord	5	..	..	..	..	..	..	1	..	..	2	..	2	..	..	..	..	3	2	....	4	....	1	2	3	....	..	..	1	..	..	1	1	1	..	..	1	..
42. Apoplexy	25	....	..	..	..	..	..	..	..	..	1	1	3	10	7	2	1	10	15	....	13	12	....	3	22	....	1	3	4	1	3	4	1	..	2	2	1	3
43. Softening of brain	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	..	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
44. Paralysis	28	1	..	..	..	..	..	..	..	1	1	3	5	4	6	7	..	16	12	....	22	5	1	2	22	4	2	1	4	1	3	..	3	3	1	4	5	1
46. Other forms of mental disease	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
47. Other disease of brain	3	....	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	2	1	....	2	1	....	1	2	....	1	1	..	..	..	1	..	..	..	..	..	..
48. Epilepsy	2	....	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2	....	....	2	....	....	1	1	....	..	1	..	..	..	..	..	1	..	..	..	..
49. Convulsions	13	5	3	..	1	..	..	..	..	1	2	1	..	..	..	..	..	4	9	....	12	1	....	10	3	....	..	..	4	1	..	2	1	1	..	..	1	3
50. Tetanus	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
51. Other diseases of nervous system	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	110	4	2	..	..	..	3	1	2	4	4	2	21	27	25	13	1	57	53	....	76	31	3	24	85	1	14	5	5	4	6	7	13	9	10	14	10	13
52. Pericarditis	2	....	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	2	....	....	2	....	....	....	2	....	....	..	..	..	..	..	..	..	..	..	..	..	2
53. Endocarditis	37	1	..	..	..	..	1	1	..	..	1	1	5	7	12	7	1	19	18	....	22	14	1	5	31	1	5	2	3	..	2	3	4	4	4	2	3	5
54. Heart Disease	50	2	1	..	..	..	2	..	2	3	2	1	11	16	9	1	..	24	26	....	34	14	2	16	34	....	3	2	1	3	3	1	4	3	2	9	6	5
55. Angina pectoris	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..
56. Diseases of arteries	12	....	1	..	..	..	..	..	..	..	..	1	2	2	2	4	..	8	4	....	10	2	....	1	11	....	..	..	..	..	..	..	..	4	2	3	2	..	1
57. Embolism and thrombosis	6	....	..	..	..	..	..	..	..	..	..	..	2	2	1	1	..	3	3	....	5	1	....	1	5	....	1	1	1	1	..	..	..	..	..	1	..	..
60. Other diseases of circulatory system	2	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	1	..	..	..	..	1	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	136	32	14	2	2	1	1	..	2	8	15	9	12	21	9	8	..	68	68	....	112	21	3	71	60	5	19	16	24	16	14	8	2	4	5	7	9	12
63. Acute bronchitis	8	7	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	4	4	....	7	1	....	8	....	....	2	1	1	1	1	1	..	..	..	1	..	..
64. Chronic bronchitis	11	....	..	..	..	..	..	..	..	..	..	..	2	2	4	3	..	3	8	....	8	2	1	1	9	1	1	1	1	1	1	1	1	1	1	1	..	1
65. Broncho-pneumonia	23	11	6	..	1	..	..	..	1	..	1	..	1	1	..	1	..	12	11	....	22	1	....	19	4	..	3	3	4	5	..	2	1	1	..	..	2	2
66. Pneumonia	83	12	8	2	1	1	..	..	1	8	11	8	9	13	5	4	..	41	42	....	67	14	2	40	40	3	12	10	14	8	11	4	..	2	3	3	6	9
67. Pleurisy	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
68. Congestion of lungs	4	1	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	3	1	....	3	1	....	1	3	....	..	..	1	1	1	..	..	..	1	..	..
70. Asthma and emphysema	4	....	..	..	..	..	..	..	..	..	1	..	..	3	..	..	..	3	1	....	3	1	....	1	3	....	..	..	..	1	..	..	..	..	1	1	1	..
71. Hemorrhage of lungs	2	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	....	....	2	....	....	1	....	1	..	1	..	..	..	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	175	90	11	2	..	2	5	5	4	13	10	7	9	7	5	4	1	96	79	....	163	8	4	135	33	7	4	10	9	10	6	13	34	43	16	11	5	14
77. Gastritis	6	2	1	..	..	..	..	..	..	..	..	..	2	..	1	..	..	2	4	....	6	....	....	5	....	1	..	2	..	..	..	2	1	..	..	..	..	1
78. Other diseases of stomach	6	....	1	..	..	..	..	..	..	..	..	2	..	1	2	..	..	2	4	....	5	1	....	2	2	2	..	..	..	..	1	..	1	..	2	..	1	..	1
80. Diarrhœa and enteritis, (under 2 years)	96	86	9	..	..	..	..	..	..	..	..	..	..	..	..	..	1	54	42	....	96	....	....	96	....	....	3	1	1	1	3	6	30	32	10	8	..	1
81. Diarrhœa and enteritis (2 years and over)	6	....	..	1	..	1	1	..	..	..	..	..	..	1	..	2	..	2	4	....	5	1	....	3	3	....	..	1	1	1	..	..	1	2	..	..	..	..
82. Hernia	4	....	..	..	..	..	..	..	..	1	..	1	..	1	1	..	..	2	2	....	2	2	....	1	2	1	..	..	..	..	..	1	..	..	1	1	1	..

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OTTAWA.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	41	1	..	..	..	..	1	1	1	13	11	8	4	4	..	..	..	34	10	....	29	13	2	20	19	5	3	5	5	1	3	2	4	6	3	5	4	3
120. Suicides	7	....	..	..	..	..	..	..	..	4	1	1	..	1	..	..	..	4	3	....	4	3	....	1	6	....	..	2	..	..	2	..	1	..	..	1	..	1
121. Fractures and dislocations	7	....	..	..	..	..	..	..	..	2	3	1	..	1	..	..	..	7	....	....	5	1	1	6	....	1	1	..	..	..	..	..	1	1	1	1	1	1
122. Burns and scalds	3	....	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	....	3	....	2	1	....	2	....	1	..	..	1	..	..	..	..	..	1	..	1	..	..
123. Physical phenomena	4	....	..	..	..	..	..	..	..	1	3	..	..	..	..	..	..	3	1	....	3	1	....	2	2	....	..	1	2	..	..	..	1	..	..	..	..	..	..
124. Drowning	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	..	..	..	1	1	..	..	..	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..
127. Other accidental traumatisms	19	....	..	..	..	..	1	1	1	5	2	5	2	2	..	..	..	18	1	....	12	6	1	7	9	3	2	2	2	1	1	1	..	3	2	1	3	1
128. Injuries at birth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	70	16	..	1	..	..	3	..	..	1	6	3	7	13	11	9	..	35	33	2	52	12	6	24	40	6	7	5	6	9	5	3	4	4	8	4	1	14
130. Dropsy	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	1	....	1	1	....	....	2	....	..	1	..	..	1	..	..	..	..	..	..	..	..
131. Heart Failure	32	1	..	..	..	..	..	..	..	2	2	2	11	8	6	..	..	18	13	1	16	11	5	10	18	4	4	4	2	7	1	..	1	2	3	1	..	7
132. Other ill-defined causes	30	12	..	1	..	..	3	..	..	1	3	1	4	2	1	2	..	13	16	1	29	....	1	10	18	2	3	..	..	1	2	3	3	2	5	3	1	7
133. Unknown causes	6	3	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	3	....	6	....	....	4	2	....	..	..	..	4	1	1	..	..	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	68	68	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	33	5	68	....	....	68	....	....	7	5	2	8	5	7	7	6	5	1	9	6

CAUSES OF DEATHS BY CITIES—PETERBOROUGH, 1907.

Causes of Death.	Total.	Ages. Under 5. 0.	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES. (*A. Epidemic Diseases.*)																																						
Grand Total	231	51	5	1	1	1	3	3	7	14	25	16	23	23	35	12	1	116	114	1	158	67	6	107	122	2	17	13	25	24	25	15	29	22	14	17	22	18
Group Total	8	1	..	..	1	..	..	..	1	1	1	1	1	..	..	1	..	7	1	....	6	2	....	4	4	....	.	1	..	2	..	..	..	4	..	..	..	1
1. Typhoid fever	4	....	..	..	..	..	..	..	1	1	1	..	1	..	..	..	..	4	....	....	3	1	....	2	2	....	..	..	..	..	..	..	..	4	..	..	..	..	..
4. Measles	2	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	1	..	..	..	..	..	..	..	1
8. Influenza	2	....	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	1	....	1	1	....	....	2	....	..	1	..	1	..	..	..	..	..	..	..	..	..

(*B. Other General Diseases.*)

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PETERBOROUGH.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	23	9	2	..	..	..	..	..	1	2	3	2	..	..	2	1	1	16	7	....	16	5	2	17	5	1	1	..	1	1	1	..	5	6	2	2	2	2
74. Tonsilitis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
77. Gastritis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
78. Other diseases of the stomach	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	....	3	1	....	4	....	....	..	..	..	..	..	..	1	1	2	..	..
80. Diarrhœa and enteritis, (under 2 years)	6	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	....	6	....	....	6	....	....	..	..	..	1	..	..	1	3	..	..	..	1
81. Diarrhœa and enteritis (2 years and over)	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
82. Hernia	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
87. Cirrhosis of liver	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
89. Other diseases of the liver	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	..	..	..	..	..	1	..	..	1	..
91. Peritonitis, non-puerperal	2	....	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	1	....	2	....	....	2	....	....	1	..	..	..	1	..	..	..	..	..	..	..
92. Appendicitis	4	....	..	..	..	..	..	..	1	1	1	..	..	..	..	..	1	4	....	....	2	...	2	3	....	1	..	..	1	..	..	..	1	..	1	..	..	1
VI. DISEASES OF GENITO-URINARY SYSTEM.																																					
Group Total	10	....	..	..	..	..	..	..	..	..	5	2	1	1	..	1	..	3	7	....	8	2	....	1	9	....	..	1	1	1	..	2	1	..	..	3	1	..
95. Bright's disease	10	...	..	..	..	..	..	..	..	..	5	2	1	1	..	1	..	3	7	..	8	2	....	1	9	....	..	1	1	1	..	2	1	..	..	3	1	..
VII. THE PUERPERAL STATE.																																					
Group Total	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	...	2	....	2	....	....	....	2	....	..	..	..	..	..	..	1	..	..	1	..	..
108. Other causes incident to childbirth	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	..	1	..	..	1	..	..
VIII DISEASES OF SKIN.																																					
Group Total	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	3	....	3	....	....	3	....	....	..	..	1	..	..	..	..	1	..	..	..	1
109. Gangrene	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
112. Other diseases of skin	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	1	..	..	..	..	1	..	..	..	..
IX. DISEASES OF LOCOMOTOR SYSTEM.																																					
Group Total	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
113. Diseases of the bones	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
XI. EARLY INFANCY.																																					
Group Total	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	7	....	12	....	....	12	....	....	2	..	1	2	3	..	..	2	1	..	1	..
117. Premature birth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
118. Congenital debility	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	6	....	11	....	....	11	....	....	2	..	..	2	3	..	..	2	1	..	1	..
119. XII. OLD AGE																																					
Group Total	16	....	..	..	..	..	..	..	..	..	..	..	..	2	8	6	..	6	10	....	3	12	1	....	16	....	..	..	1	2	3	..	2	..	3	..	4	1

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PORT ARTHUR—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases).																																						
Group Total	24	..	..	3	..	..	1	..	2	4	3	5	2	4	..	:	..	18	6	....	12	12	....	13	11	....	..	3	3	2	1	1	1	2	3	3	2	3
13. Tuberculosis of lungs	9	....	..	..	..	..	..	..	1	3	..	3	..	2	..	..	..	7	2	....	4	5	....	4	5	....	..	1	2	..	1	1	..	..	..	1	2	1
15. Tuberculous meningitis	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	1	..	..	..	..	..	..	..	..
21. General tuberculosis	7	....	..	2	..	..	1	..	1	..	2	1	..	..	..	..	..	4	3	....	4	3	....	5	2	...	..	2	1	..	..	..	..	1	2	1	..	..
25. Cancer of stomach and liver	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	....	1	..	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
30 Cancer of other unspecified organs	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
33. Diabetes	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	..	1	1	..	..	..
34. Anæmia, ieukæmia	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	..	..	..	1
35. Alcoholism	2	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2	..	....	....	2	....	1	1	....	..	..	..	..	..	..	..	1	..	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	18	9	1	3	..	1	..	..	..	..	..	1	..	2	1	..	..	10	8	....	16	1	1	14	4	....	1	1	1	2	3	1	3	3	1	..	..	2
39. Meningitis	5	2	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	3	2	....	4	1	....	5	....	....	..	..	1	..	..	..	2	1	..	..	..	1
42. Apoplexy	3	....	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	2	1	....	2	....	1	....	3	....	..	1	..	..	1	..	1	..	..	..	..	..
47. Other diseases of brain	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	1	..	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
49. Convulsions	9	7	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	5	....	9	....	....	9	....	....	1	..	..	2	2	1	..	2	1	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	9	....	..	..	..	..	..	..	..	3	..	..	3	2	1	..	..	3	6	....	4	5	....	2	7	....	1	..	2	1	..	2	2	..	..	..	1	..
54. Heart Disease	5	....	..	..	..	..	..	..	..	1	..	..	2	2	..	..	..	2	3	....	2	3	....	1	4	....	1	..	..	1	..	1	1	..	..	..	1	..
55. Angina pectoris	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	..	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
56. Diseases of arteries	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	...	1	....	..	..	..	..	..	1	..	..	..	..	..	..
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	..	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	....	1	....	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	23	6	2	2	1	1	..	..	..	3	4	1	..	3	..	..	..	15	8	....	16	6	1	16	5	2	4	3	1	1	3	3	2	1	..	..	1	4
61. Diseases of larynx	2	....	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....	2	....	....	2	....	....	1	..	..	..	..	..	1	..	..	..	..	..
63. Acute bronchitis	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	..	1	..	..	..	1
64. Chronic bronchitis	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	....	2	....	....	1	1	....	..	1	..	..	..	..	..	..	..	..	..	1
65. Broncho-pneumonia	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	1	1	..	..	..	..	..	..	..	..	..
66. Pneumonia	14	3	..	1	..	1	..	..	..	3	4	1	..	1	..	..	..	9	5	....	8	5	1	9	3	2	3	1	..	1	3	2	1	..	..	..	1	2
70. Asthma and emphysema	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	33	25	2	..	1	..	..	..	..	2	2	1	..	..	..	..	..	14	19	....	30	3	....	28	5	....	1	1	2	1	1	..	1	11	8	1	1	5
77. Gastritis	2	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	..	2	..	..	..	..
78. Other diseases of the stomach	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	7	....	8	....	....	8	....	....	..	..	..	1	1	1	..	1	..	..	1	2

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CAUSES OF DEATHS BY CITIES—ST. CATHARINES, 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Male.	Female	Not stated.	Canadian.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	190	59	4	1	..	..	7	4	4	19	14	9	14	21	19	15	..	104	86	....	138	52	....	105	82	3	23	11	18	21	13	9	14	12	22	11	19	17
Group Total	5	....	..	..	..	..	1	2	..	1	..	..	..	1	..	..	..	..	5	....	4	1	....	4	1	....	1	..	1	1	..	..	..	..	1	1	..	..
1. Typhoid Fever	3	....	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	....	3	....	3	....	....	3	....	....	1	..	..	..	..	..	..	..	1	1	..	..
7. Diphtheria and Croup	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
8. Influenza	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
(*B. Other General Diseases*).																																					
Group Total	26	1	..	..	..	..	1	..	1	6	4	2	1	4	2	4	..	12	14	....	16	10	....	5	21	....	2	1	1	3	3	2	2	1	4	1	2	4
12. Septicæmia	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
13. Tuberculosis of lungs	6	....	..	..	..	..	..	..	..	2	3	..	..	1	..	..	..	4	2	....	5	1	....	....	6	....	1	..	..	..	..	..	1	2	..	..	..	2
15. Tuberculous meningitis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
21. General tuberculosis	3	....	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	2	1	....	3	....	....	1	2	....	..	..	..	1	..	1	..	..	..	..	..	1
25. Cancer of stomach and liver	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..
29. Cancer of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
30. Cancer of other unspecified organs	6	....	..	..	..	..	..	..	..	1	2	..	1	1	1	..	..	1	5	....	....	6	....	....	6	....	1	..	..	2	1	..	..	..	1	1	..	..
31. Tumors	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	....	2	....	....	1	1	....	..	1	..	..	1	..	..	..	..	..	..	..
33. Diabetes	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	..	..	1	1
35. Alcoholism	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	23	4	3	1	..	..	..	1	..	1	1	1	4	3	4	..	..	16	7	....	17	6	....	10	13	....	4	1	1	3	2	1	3	..	2	.	2	4
39. Meningitis	6	1	3	..	..	..	..	..	..	1	1	..	..	..	..	..	..	4	2	....	6	..	....	4	2	...	1	..	..	..	1	..	2	..	..	..	1	1
42. Apoplexy	7	....	..	..	..	..	..	..	..	..	..	..	3	3	1	..	..	4	3	...	3	4	....	1	6	....	2	1	1	..	..	..	..	..	1	..	.	1
44. Paralysis	5	....	..	..	..	..	..	..	..	..	..	1	1	..	3	..	..	4	1	...	3	2	....	....	5	...	1	..	..	1	1	1	..	..	..	..	1	..
49. Convulsions	5	3	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	4	1	....	5	..	....	5	..	....	..	..	..	2	..	..	..	..	1	..	.	2

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ST. CATHARINES.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIII.—VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	9						3			2	2	2						9			6	3		3	5	1	2				1	1	1	2	1		1	
120. Suicides	2						1			1								2			2			1	1		1								1			
123. Physical phenomena	1										1							1				1				1							1					
124. Drowning	2						2											2			1	1		2							1	1						
126. Other accidental poisonings	1											1						1				1			1		1											
127. Other accidental traumatisms	3									1	1	1						3			3				3									2			1	
XIV. ILL-DEFINED DISEASES																																						
Group Total	17										2	1	3	3	6	2		5	12		11	6		4	12	1	2			3	2		2		3	1	2	2
130. Dropsy	1														1				1			1			1						1							
131. Heart failure	14										2	1	2	3	4	2		5	9		9	5		3	10	1	2			3	1		2		1	1	2	2
132. Other ill-defined causes	2												1		1				2		2			1	1									2				
134. XV. STILL BIRTHS.																																						
Group Total	12	12																7	5		12			12					2	3	1		2		1		2	1

CAUSES OF DEATHS BY CITIES—STRATFORD, 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Month.											
		Under 5.																																				
		0.1	1.	2.	3.	4.	5-9.	10-11.	15-19.	20-29.	30-39	40-49.	50-59.	60-69.	70-79.	80 and over	Not stated.	Male.	Female.	Not stated	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES. (*A. Epidemic Diseases.*)																																						
Grand Total	125	27	1				3	1	2	7	12	5	9	18	21	17	2	64	61	...	64	58	3	54	70	1	14	13	14	10	9	9	4	12	10	16	4	10
Group Total	10	4							1	2		1	1			1		2	8		8	2		7	3		3	2			1	1	1		1			1
1. Typhoid Fever	4									2		1	1					1	3		2	2		2	2		1	2					1					
5. Scarlet Fever	1								1										1		1			1														1

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STRATFORD.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	11	7	..	..	..	..	..	1	..	1	..	..	..	1	..	..	1	7	4	....	9	2	....	9	2	....	2	1	1	1	..	1	1	1	2	1	..	.
78. Other diseases of the stomach	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	1	..	..	..	..	..	..	..	..	1	..	..
80. Diarrhœa and enteritis (under 2 years)	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	....	4	....	....	4	....	....	..	..	1	..	..	..	1	..	2	..	..	..
81. Diarrhœa and enteritis (2 years and over)	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..
83. Obstruction of intestines	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
89. Other diseases of liver	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
92. Appendicitis	2	....	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	1	..	..	..	..	1	..	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	6	....	..	..	..	..	..	..	..	1	..	..	1	..	2	2	..	4	2	....	4	2	....	1	5	....	1	2	..	..	1	1	..	..	..	..	1	..
95. Bright's disease	5	....	..	..	..	..	..	..	..	1	..	..	1	..	1	2	..	3	2	....	4	1	....	1	4	....	..	2	..	..	1	1	..	..	..	..	1	..
98. Diseases of bladder	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	...	1	..	..	..	..	..	..	..	..	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	....	....	5	....	....	5	....	....	..	.	2	..	..	..	..	..	2	..	1	..
117. Premature birth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
118. Congenital debility	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	....	..	4	....	....	4	....	....	..	..	1	..	..	..	..	..	2	..	1	..
119. XII. OLD AGE.																																						
Group Total	7	....	..	..	..	..	..	..	..	..	..	..	..	..	3	4	..	4	3	....	1	5	1	2	5	....	..	1	..	..	..	..	..	1	..	3	1	1
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	4	....	..	..	..	..	1	..	1	..	1	..	..	..	1	..	..	3	1	....	2	2	....	2	2	....	..	..	..	..	..	..	..	2	1	..	.	1
122. Burns and scalds	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
124. Drowning	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	.
127. Other accidental traumatisms	2	....	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	2	....	....	1	1	....	1	1	....	..	..	..	..	..	..	1	1	..	..	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	11	1	..	..	..	..	..	..	..	..	3	1	1	2	1	2	..	7	4	...	5	6	....	4	6	1	1	1	1	2	1	1	1	..	..	3	.	..
130. Dropsy	2	....	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	2	....	....	1	1	....	2	....	....	1	..	..	..	..	..	1	..	..	..	..	..
131. Heart failure	3	....	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	3	....	....	1	2	....	....	2	1	..	..	..	..	..	..	..	..	2	..	..
132. Other ill-defined causes	3	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	1	....	....	3	....	....	3	....	..	1	..	1	..	..	..	..	..	1	..	..
133. Unknown causes	3	....	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	....	3	....	3	....	....	2	1	....	..	..	1	1	1	..	..	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	....	4	....	....	4	....	....	..	..	2	..	..	1	..	..	..	..	..	1

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	187	42	4	1	..	4	4	2	3	18	10	15	14	20	32	18	..	107	80	....	130	55	1	79	107	1	17	19	22	20	18	10	16	14	16	14	14	7
Group Total	5	....	.	1	..	..	1	..	..	2	..	1	..	..	..	..	..	.. 2	3	....	5	....	....	4	1	...	1	..	1	1	..	..	..	..	1	..	1	..
1. Typhoid Fever	3	....	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	.. 2	.. 1	....	3	....	....	2	1	....	1	..	..	1	..	..	..	..	1	..	..	..
6. Whooping Cough	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
7. Diphtheria and Croup	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
(*B. Other General Diseases.*)																																					
Group Total	19	....	..	..	..	..	..	..	..	5	2	2	5	5	..	..	..	8	11	....	10	8	1	7	12	....	1	2	4	1	4	..	2	2	.	2	..	1
12. Septicæmia	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
13. Tuberculosis of lungs	3	....	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	.. 2	1	....	....	3	....	3	....	....	..	..	..	..	1	..	1	..	..	1	..	..
21. General Tuberculosis	3	....	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	3	....	....	2	1	....	2	1	....	..	1	..	1	1	..	..	..	..	..	..	..
25. Cancer of stomach and liver	4	....	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	2	2	....	3	1	....	....	4	....	1	..	1	..	..	..	1	..	..	..	..	1
26. Cancer of Intestines	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	.	1	..	..	..	..	..	..	..	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
30. Cancer of other unspecified organs	2	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	1	..	1	..	..	..	..	..	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	....	1	.. 1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
34. Anæmia, leukæmia	3	....	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	....	3	....	1	2	....	1	2	....	..	..	2	..	..	1	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	42	11	1	.	2	..	..	1	..	1	1	6	3	1	11	4	..	22	20	....	32	10	...	20	22	..	4	4	6	2	3	2	4	6	1	1	6	2
38. Encephalitis	2	....	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	2	....	....	1	1	....	1	1	....	..	..	..	1	..	..	..	..	..	..	1	..
39. Meningitis	4	1	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	2	2	....	4	....	....	3	1	....	..	..	2	1	..	..	1	..	..	..	1	..
42. Apoplexy	4	....	..	..	..	..	..	..	..	1	..	..	1	..	2	..	..	1	3	....	3	1	....	1	3	....	1	..	..	..	..	1	1	..	..	..	1	..
43. Softening of Brain	2	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	..	..	..	..	..	..	2	..
44. Paralysis	13	1	..	..	..	..	..	..	..	..	..	..	1	1	6	4	..	6	7	....	9	4	....	1	12	....	1	.	2	.	2	1	2	1	.	1	2	1
47. Other diseases of brain	4	....	..	..	..	..	..	1	..	..	1	1	..	..	1	..	..	3	1	....	3	1	....	2	2	....	2	..	..	..	1	..	..	1	..	..	..	..
48. Epilepsy	2	....	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	1	....	....	2	....	1	1	....	..	..	..	..	..	..	1	1	..	..	..	..
49. Convulsions	10	9	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	5	....	10	....	....	10	....	....	..	3	2	..	..	..	..	3	..	1	..	1
51. Other diseases of the nervous system	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..

ST THOMAS—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
III. DISEASES OF CIRCULATORY SYSTEM. **Group Total**	9	1	..	..	..	..	..	..	1	..	..	1	1	3	1	2	..	4	5	....	5	4	....	2	7	....	1	..	2	..	1	..	1	..	..	1	3	..
53. Endocarditis	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
54. Heart disease	8	1	..	..	..	..	..	..	..	..	..	1	1	2	1	2	..	4	4	....	4	4	....	2	6	....	..	..	2	..	1	..	1	..	..	1	3	..
IV. DISEASES OF RESPIRATORY SYSTEM. **Group Total**	19	5	2	..	1	..	..	..	1	2	2	2	..	..	2	2	..	13	6	....	15	4	....	9	10	....	3	2	5	5	..	2	..	..	1	..	..	1
63. Acute bronchitis	3	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	3	..	..	3	..	..	1	1	..	1	..	..	..	..	..	..	..	..
64. Chronic bronchitis	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..
66. Pneumonia	12	3	2	..	..	..	..	..	..	1	1	2	..	..	2	1	..	9	3	....	10	2	....	6	6	....	2	..	5	2	..	1	..	..	1	..	..	1
68. Congestion of lungs	3	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	3	....	2	1	....	..	3	....	..	1	..	1	..	1	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM. **Group Total**	17	3	1	..	1	..	2	..	..	1	1	..	1	5	2	..	..	11	6	....	14	3	....	9	8	....	1	1	1	2	3	..	..	1	5	2	..	1
74. Tonsilitis	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..
77. Gastritis	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..
80. Diarrhœa and enteritis (under 2 years)	4	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	....	4	..	..	4	..	..	..	..	..	..	1	..	..	3	..	..	..
81. Diarrhœa and enteritis, (2 years and over)	2	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	2	..	..	2	..	..	..	1	..	..	..	..	..	..	1	..	..
82. Hernia	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..
87. Cirrhosis of liver	3	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	3	..	..	3	..	..	1	2	..	..	..	..	..	1	..	1	..	..	..	..	1
89. Other diseases of liver	3	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	2	....	1	2	....	..	3	....	1	..	..	..	..	..	..	..	1	1	..	..
91. Peritonitis, non-puerperal	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..
92. Appendicitis	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM. **Group Total**	7	..	..	..	..	..	..	..	..	2	..	2	..	..	2	1	..	4	3	....	5	2	....	..	7	....	..	2	1	..	..	..	1	..	2	..	1	..
95. Bright's disease	3	..	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..	1	2	....	3	..	..	..	3	..	..	..	..	..	..	..	1	..	1	..	1	..
98. Diseases of bladder	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..
105. Other diseases of the genito-urinary system	3	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	2	1	....	1	2	....	..	3	....	..	2	1	..	..	..	..	..	..	..	..	..
VIII. DISEASES OF SKIN. **Group Total**	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	1	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..
109. Gangrene	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	1	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..
IX. DISEASES OF LOCOMOTOR SYSTEM. **Group Total**	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
113. Diseases of the bones	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
X. MALFORMATIONS. **Group Total**	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
116. Congenital malformations (still-births excluded)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
XI. EARLY INFANCY. **Group Total**	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	6	....	12	..	..	12	..	..	2	1	..	2	2	..	..	3	1	..	1
117. Premature Birth	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	....	5	..	..	5	..	..	1	..	..	2	1	..	..	..	..	..	..	1
118. Congenital debility	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	....	7	..	..	7	..	..	1	1	..	..	1	..	..	3	1	..	..	..

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Number of column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	715	21	15	7	4	3	13	14	26	113	110	88	108	112	61	14	6	320	395	..	410	283	22	255	442	18	51	62	69	66	63	68	54	59	46	53	58	66
12. Septicæmia	46	4	..	..	1	..	2	4	1	11	10	4	3	2	3	1	..	13	33	..	22	18	6	19	26	1	3	6	7	8	5	2	2	5	2	2	2	2
13. Tuberculosis of lungs	191	2	4	5	..	..	1	3	12	57	47	27	19	11	2	..	1	102	89	..	119	67	5	84	102	5	13	15	13	20	24	27	15	10	11	10	16	17
14. Tuberculosis of larynx	2	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	..	2	..	..	2	..	..	1	..	1	..	..	..	..	..	..	..	..	..
15. Tuberculous meningitis	31	5	6	1	2	2	8	..	1	5	..	..	1	..	..	..	..	14	17	..	25	6	..	28	2	1	2	3	3	4	1	5	1	3	1	1	3	4
17. Pott's disease	3	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	2	1	..	..	3	..	..	2	1	..	..	..	..	..	..	1	..	..	..	..	..	2
20. Tuberculosis of other organs	16	1	..	..	..	2	1	2	4	1	1	1	3	..	..	..	..	10	6	..	8	8	..	12	4	..	..	3	1	5	..	1	1	..	2	2	1	..
21 General Tuberculosis	86	6	2	..	..	1	..	1	6	21	21	15	5	5	2	1	..	38	48	..	63	22	1	48	37	1	4	13	9	4	10	9	7	8	3	8	6	5
23. Venereal diseases	5	1	..	..	..	..	..	..	..	2	1	..	..	..	..	..	1	1	4	..	4	1	..	3	1	1	2	..	..	..	..	..	1	1	..	..	..	1	..
24. Cancer of mouth	2	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	..	2	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1
25. Cancer of stomach and liver	66	..	..	..	..	..	..	..	2	3	9	14	24	8	4	2	..	36	30	..	28	34	4	5	59	2	7	5	3	3	4	6	5	10	6	7	3	7
26. Cancer of intestines	8	..	..	..	..	..	..	..	..	..	..	1	3	1	2	1	..	3	5	..	3	5	..	..	8	..	1	..	3	1	..	..	..	1	1	..	1	..
27. Cancer of genital organs	7	..	..	..	..	..	..	..	..	..	1	2	2	2	..	..	..	1	6	..	4	2	1	1	6	..	1	..	1	..	..	1	..	..	..	1	3	..
28. Cancer of breast	10	..	..	..	..	..	..	..	..	..	..	4	2	1	..	1	..	..	10	..	5	5	..	1	9	..	..	3	..	1	..	2	..	..	..	1	2	1	..
29. Cancer of skin	8	..	..	..	..	..	..	..	..	..	1	..	4	1	2	..	..	6	2	..	4	4	..	2	6	..	3	..	1	..	..	..	..	..	1	1	2	..
30. Cancer of other unspecified organs	103	..	1	..	..	..	..	1	1	2	9	11	25	35	14	4	..	34	69	..	50	52	1	15	87	1	5	5	17	11	5	5	12	9	10	6	8	10
31. Tumors	3	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	2	1	..	3	..	..	1	2	..	..	..	..	..	..	1	..	..	..	..	1	1
32. Rheumatism	21	..	..	..	..	..	1	1	2	4	1	3	3	7	1	1	..	9	15	..	14	9	1	9	14	1	2	3	2	1	2	1	..	2	3	1	5
33. Diabetes	36	..	..	..	..	..	1	1	..	5	3	11	7	7	1	..	..	21	15	..	20	16	..	6	29	1	..	3	2	3	5	2	2	1	2	6	5	5
34. Anæmia, leukæmia	45	2	2	1	..	..	..	..	..	4	2	4	8	11	10	..	1	14	31	..	22	21	2	15	30	..	3	3	3	4	7	4	5	6	3	3	1	3
35. Alcoholism	13	..	..	..	..	..	..	..	..	1	3	4	4	1	..	..	..	9	4	..	10	3	..	2	9	2	2	..	2	1	..	2	1	1	..	2	1	..
36. Chronic poisonings	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..
37. Other General diseases	9	..	..	..	..	..	2	..	2	1	1	..	1	2	..	..	..	3	6	..	6	2	1	3	5	1	1	..	..	..	..	..	..	1	2	..	1	2	2
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	494	103	28	7	8	4	13	11	6	28	23	47	44	63	73	32	4	281	213	..	281	199	14	219	247	28	49	52	47	56	34	43	32	31	38	34	37	41
38. Encephalitis	3	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	1	2	..	1	1	1	..	3	..	1	..	..	..	1	..	..	..	..	..	..	1
39. Meningitis	101	39	19	5	5	3	5	6	3	8	3	4	1	..	..	..	..	57	44	..	84	15	2	91	9	1	15	9	5	12	10	10	2	5	9	10	7	7
40. Locomotor ataxia	5	..	..	..	..	..	..	..	..	..	..	1	2	2	..	..	..	3	2	..	2	2	1	..	4	1	..	1	..	1	..	..	1	..	1	..	1	..
41. Other diseases of spinal cord	5	..	..	..	..	..	..	..	..	..	..	1	2	1	..	1	..	2	3	..	4	1	..	1	4	..	1	1	2	..	..	..	..	..	..	..	1	..
42. Apoplexy	142	8	..	1	..	2	1	..	4	5	11	17	30	37	26	..	..	61	81	..	57	80	5	24	107	11	13	13	15	13	9	14	13	6	13	8	12	13
43. Softening of Brain	2	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	2	..	..	..	2	..	1	1	..	..	..	..	..	..	..	..	..	..	1	1	..
44. Paralysis	91	1	..	..	..	..	1	..	..	2	5	19	11	23	23	5	1	59	32	..	20	70	1	3	81	7	7	10	8	14	5	4	8	3	8	8	6	10
45. General paralysis of insane	5	..	..	..	..	..	..	..	..	..	2	1	..	..	2	..	..	3	2	..	2	3	..	..	5	..	1	4	..	..	..	..	..	..	..	..	..	..
46. Other forms of mental disease	7	..	..	..	..	..	..	..	..	..	1	2	..	1	2	..	1	5	2	..	4	3	..	2	4	1	..	1	3	3	..	..	..	..	..	..	..	..
47. Other diseases of brain	14	..	..	..	..	..	..	1	..	2	4	1	2	3	1	..	..	11	3	..	8	6	..	7	5	2	6	..	2	..	..	1	..	1	..	2	1	1
48. Epilepsy	9	..	..	..	..	..	..	1	1	1	..	1	1	..	4	..	..	7	2	..	4	5	..	2	5	2	..	3	..	2	..	1	1	..	..	1	1	..
49. Convulsions	75	53	9	1	2	..	2	..	1	5	..	2	..	..	..	..	..	48	27	..	74	1	..	74	1	..	4	9	11	8	5	7	3	9	4	3	4	8
50. Tetanus	6	..	..	..	1	1	2	..	..	..	1	1	..	..	..	..	..	5	1	..	3	3	..	4	2	..	..	..	1	..	..	2	1	..	..	..	2	..
51. Other diseases of nervous system	29	2	..	..	..	1	2	1	5	2	3	6	2	3	..	2	..	17	12	..	18	7	4	10	16	3	1	1	..	3	4	4	3	7	2	1	2	1
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	440	16	3	1	1	1	3	6	17	27	21	33	68	100	97	44	2	267	173	..	202	211	27	112	292	36	35	37	34	34	47	44	30	28	34	41	35	41
52. Pericarditis	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..
53. Endocarditis	64	..	1	..	1	..	2	2	1	5	3	4	10	16	10	8	..	39	25	..	25	33	6	18	40	6	4	4	4	2	4	13	5	4	2	7	5	10
54. Heart disease	254	6	2	1	..	1	1	4	14	18	12	25	36	52	57	23	2	144	110	..	119	123	12	71	163	20	23	23	29	23	26	20	16	17	22	24	23	18

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII. THE PUERPERAL STATE.																																						
Group Total	28	....	..	..	..	..	..	..	1	16	7	3	1	...	..	..	..	....	28	..	22	6	..	....	26	2	5	1	4	3	4	4	1	3	1	2	..	..
106. Puerperal septicæmia	9	....	..	..	..	..	..	..	..	6	1	2	...	..	..	..	..	....	9	..	8	1	..	....	9	..	1	..	1	2	3	1	..	1	..	..	..	..
107. Puerperal convulsions	9	....	..	..	..	..	..	..	..	6	3	..	..	..	..	..	..	....	9	..	8	1	..	....	8	1	2	..	3	1	1	1	1	..	..	..	..	..
108. Other causes incident to child-birth	10	...	..	..	..	..	..	..	1	4	3	1	1	...	..	..	..	....	10	..	6	4	..	....	9	1	2	1	..	..	..	2	..	2	1	2	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	25	....	1	..	..	..	..	1	..	2	1	2	1	6	10	1	..	12	13	..	8	16	1	7	17	1	2	1	2	3	2	2	2	1	3	1	3	3
109. Gangrene	16	....	..	..	..	..	..	..	..	1	1	1	...	4	8	1	..	7	9	..	5	10	1	2	13	1	1	1	1	1	2	2	2	1	3	..	1	1
110. Carbuncle	2	....	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	..	....	2	..	....	2	..	1	..	..	1	..	..	..	..	..	..	..	..
111. Abscess	7	....	1	..	..	..	..	1	..	1	..	..	1	2	1	..	..	4	3	..	3	4	..	5	2	..	..	..	1	1	..	..	..	..	..	1	2	2
IX. DISEASES OF LOCOMOTOR SYSTEM.																																						
Group Total	7	2	1	1	..	..	..	..	..	2	..	..	1	..	..	..	..	6	1	..	6	1	..	6	1	..	..	..	1	1	1	2	..	1	1	..	..	..
113. Diseases of the bones	6	2	1	1	..	..	..	..	..	1	..	..	1	..	..	..	..	5	1	..	5	1	..	5	1	..	..	..	..	1	1	2	..	1	1	..	..	..
115. Other diseases of locomotor system	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	..	1	....	..	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	18	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	9	1	18	....	..	18	....	..	1	1	2	1	1	1	1	3	1	2	1	3
116. Congenital malformations (still-births excluded)	18	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	9	1	18	....	..	18	...	.	1	1	2	1	1	1	1	3	1	2	1	3
XI. EARLY INFANCY.																																						
Group Total	288	288	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	158	127	3	288	....	.	288	....	..	22	26	33	27	23	23	26	28	23	22	17	18
117. Premature birth	90	90	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	37	3	90	....	..	90	....	..	4	5	11	10	4	9	6	8	9	8	7	9
118. Congenital debility	198	198	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	108	90	..	198	....	..	198	....	..	18	21	22	17	19	14	20	20	14	14	10	9
119. XII. OLD AGE.																																						
Group Total	170	....	..	..	..	..	.	..	..	..	..	..	..	11	50	109	..	69	191	..	36	127	7	17	140	13	19	14	15	17	11	17	10	9	12	5	23	15
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	229	6	8	2	4	1	10	9	12	42	35	29	28	18	10	8	7	168	61	..	99	100	30	87	108	31	14	17	15	12	15	17	28	25	26	27	22	11
120. Suicides	36	....	.	..	..	..	..	..	1	11	4	7	5	3	8	1	1	31	5	..	8	22	6	8	22	6	3	2	3	3	2	3	3	2	4	5	4	2
121. Fractures and dislocations	12	....	..	..	..	..	..	..	..	..	3	2	3	..	2	2	..	6	6	..	6	6	..	3	8	1	4	..	..	1	2	..	..	2	2	1	..	..
122. Burns and scalds	26	1	8	2	3	.	4	..	1	4	..	1	..	2	..	..	..	8	18	..	18	8	..	18	8	..	2	2	2	2	1	5	4	1	2	2	2	1
123. Physical phenomena	4	....	..	..	..	..	..	..	..	2	1	..	1	..	..	..	..	2	2	..	....	4	..	3	1	..	..	..	3	..	..	..	..	1	..	..	..	..
124. Drowning	32	....	..	..	..	..	3	6	2	5	3	3	3	5	..	..	2	28	4	..	19	9	4	12	10	10	1	2	1	1	4	1	8	5	2	4	2	1
125. Inhalation of poisonous gases	17	1	..	..	..	..	..	..	..	4	2	1	4	2	2	..	1	12	5	..	9	5	3	4	11	2	1	1	4	..	1	..	..	2	2	4	2	..
126. Other accidental poisonings	12	....	..	..	..	..	..	1	1	1	..	3	3	2	..	..	1	7	5	..	4	5	3	3	8	1	1	..	..	..	1	..	2	2	1	2	1	1
127. Other accidental traumatisms	85	1	..	..	1	1	3	2	7	15	21	12	8	4	3	5	2	71	11	..	30	41	14	33	39	13	2	6	5	5	3	7	10	11	13	9	10	4
128. Injuries at birth	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	3	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	1	2
129. Homicide	2	....	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	....	..	2	....	..	...	1	1	..	..	..	..	..	..	1	1	..	..	..	..

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WINDSOR.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(*B. Other General Diseases.*)																																						
Group Total	41	4	..	..	..	..	1	1	3	10	4	2	6	4	3	3	..	17	24	....	30	11	....	19	22	....	5	4	1	5	2	4	5	2	1	4	1	7
12. Septicæmia	3	....	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	2	1	....	2	1	....	1	2	....	1	..	..	..	..	..	1	..	..	..	..	1
13. Tuberculosis of lungs	13	1	..	..	..	..	1	..	1	4	1	2	1	..	1	1	..	5	8	....	11	2	....	7	6	....	1	1	..	2	..	1	3	..	1	2	..	2
15. Tuberculous meningitis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	2	....	2	..	....	2	..	....	..	..	..	1	..	..	..	1	..	..	..	..
16. Abdominal tuberculosis	3	....	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	....	3	....	1	2	....	....	3	....	..	1	..	..	..	..	..	1	..	..	1	..
21. General tuberculosis	7	1	..	..	..	..	..	..	1	3	1	..	..	1	..	..	..	3	4	....	4	3	....	5	2	....	..	..	..	..	1	3	1	..	..	1	..	1
25. Cancer of stomach and liver	3	....	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	2	....	2	1	....	....	3	....	1	..	..	..	1	..	..	..	..	..	..	..	1
26. Cancer of Intestines	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	3	....	..	..	..	..	..	..	..	..	..	..	2	..	..	1	..	2	1	....	3	....	....	1	2	....	..	..	1	..	..	..	..	..	..	1	..	1
31. Tumors	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
32. Rheumatism	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
34. Anæmia, leukæmia	4	....	..	..	..	..	..	..	1	..	1	..	..	1	1	..	..	2	2	....	2	2	....	1	3	....	..	1	..	1	1	..	..	..	..	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	33	9	1	..	..	..	2	..	..	1	1	3	5	5	5	1	..	14	19	....	25	8	....	14	17	2	2	4	1	6	2	2	3	1	4	1	3	4
39. Meningitis	7	4	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	4	3	....	7	....	....	7	....	....	1	2	..	1	..	..	..	1	1	..	..	1
42. Apoplexy	12	....	..	..	..	..	..	..	..	..	1	1	4	3	3	..	..	3	9	....	8	4	....	2	8	2	1	1	1	2	1	1	1	..	..	1	3	..
44. Paralysis	8	....	..	..	..	..	..	..	..	..	..	2	1	2	2	1	..	4	4	....	4	4	....	....	8	....	..	..	..	2	..	1	1	..	3	..	..	1
49. Convulsions	6	5	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	3	....	6	....	..	5	1	....	..	1	..	1	1	..	1	..	..	..	..	2
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	28	....	..	..	..	..	1	..	..	1	2	3	2	13	4	2	..	18	10	....	15	13	....	6	22	....	3	4	1	2	1	3	1	2	3	3	1	4
52. Pericarditis	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
53. Endocarditis	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
54. Heart disease	17	....	..	..	..	..	..	..	..	1	2	2	1	9	2	..	..	10	7	....	8	9	....	4	13	...	3	4	..	1	..	1	1	1	1	..	4
56. Diseases of arteries	7	....	..	..	..	..	..	..	..	..	..	1	..	3	1	2	..	6	1	....	4	3	....	1	6	....	..	..	..	1	1	1	..	..	2	1	1	..
60. Other diseases of circulatory system	2	....	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	..	..	..	1	..	1	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	27	5	2	..	1	..	1	..	2	1	2	2	1	9	..	..	1	15	12	....	17	10	....	14	11	2	2	2	4	3	4	1	1	..	2	..	3	5
63. Acute bronchitis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
65. Broncho-pneumonia	7	1	2	..	..	..	..	..	..	..	..	1	1	2	..	..	..	1	3	....	3	4	....	3	4	....	..	..	1	..	1	1	..	..	1	..	2	1
66. Pneumonia	15	3	..	..	1	..	1	..	2	1	1	1	..	4	..	..	1	9	6	....	12	3	...	10	5	....	1	2	2	2	2	..	1	..	1	..	1	3
70. Asthma and emphysema	4	....	..	..	..	..	..	..	..	..	1	..	..	3	..	..	..	1	3	....	1	3	....	....	2	2	1	..	1	1	1	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	21	6	1	..	1	..	..	..	3	3	1	1	2	1	2	..	..	12	9	....	16	5	....	14	6	1	1	2	..	..	1	3	3	4	3	3	1	..
77. Gastritis	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	1	....	2	....	....	....	1	1	..	..	..	..	..	..	..	1	..	..	1	..	..
78. Other Diseases of the Stomach	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..	..

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CAUSES OF DEATH BY CITIES—WOODSTOCK, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months											
		Under 5.					5-9	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	159	33	3	2	1	1	..	1	1	12	10	11	11	24	33	16	..	86	73	...	104	54	1	68	90	1	9	16	12	17	13	11	18	13	12	15	10	10
Group Total	8	5	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	4	4	....	5	3		6	2	....	..	..	1	..	..	3	..	2	..	2	..	..
1. Typhoid fever	2	....	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	....	2	....	1	1	....	....	2	....	..	..	..	..	..	..	..	..	..	2	..	..
6. Whooping cough	5	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	....	3	2	....	5	....	....	..	..	..	..	..	3	..	2	..	..	..	..
8. Influenza	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	38	....	1	..	1	..	..	1	1	9	3	5	3	7	5	2	..	19	19	....	30	8	....	18	20	....	3	3	3	4	4	3	5	3	..	3	2	5
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
13. Tuberculosis of lungs	10	...	1	..	..	..	..	1	..	3	2	2	1	..	..	..	..	3	7	....	9	1	....	8	2	....	1	..	2	1	2	1	1	1	..	1	..
15. Tuberculous meningitis	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
19. White swelling	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
20. Tuberculosis of other organs	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..
21. General tuberculosis	3	....	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	..	..	..	..	..	1	..	2
24. Cancer of mouth	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
25. Cancer of stomach and liver	3	....	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	1	2	....	2	1	....	....	3	....	1	..	..	..	1	..	1	..	..	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	..	..	..	..	..	..	..	..	1	..	..	..	..
29. Cancer of skin	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	1	....	1	1	....	....	2	....	..	..	..	..	..	..	1	..	..	1	..	..
30. Cancer of other unspecified organs	5	....	..	..	..	..	..	..	..	1	1	1	..	..	1	1	..	2	3	....	5	....	....	2	3	....	1	1	1	..	..	1	..	..	..	1	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..
33. Diabetes	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
34. Anæmia, leukæmia	6	....	..	..	..	..	..	1	1	..	1	1	1	1	1	..	..	4	2	....	4	2	....	2	4	....	..	..	..	1	1	..	..	1	..	..	1	2
37. Other general diseases	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	23	3	..	1	..	..	..	..	..	1	3	2	3	4	5	1	..	15	8	....	14	8	1	8	14	1	1	2	..	4	4	2	2	1	3	2	..	2
38. Encephalitis	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	..	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
39. Meningitis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..

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WOODSTOCK.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
119. XII. OLD AGE.																																						
Group Total	9	....	..	..	..	.	..	..	..	..	..	..	..	1	3	5	..	4	5	....	2	7	....	....	9	....	..	1	..	1	..	1	2	..	3	1	..	..
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	5	2	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..	4	1	....	4	....	1	3	1	1	..	..	..	2	1	1	..	1	..	..	..	..
127. Other accidental traumatisms	3	....	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..	3	....	....	2	....	1	1	1	..	..	..	..	1	1	..	..	1	..	..	..	..
128. Injuries at birth	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	1	..	..	1	..	..	..	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	10	....	..	..	..	..	..	..	..	..	..	1	2	3	2	2	..	5	5	....	2	8	....	1	9	....	..	1	1	..	1	.	2	..	2	1	2	.
130. Dropsy	4	....	..	..	..	..	..	..	..	..	..	..	..	1	1	2	..	1	3	....	....	4	....	....	4	....	..	..	..	..	..	..	1	..	1	1	1	..
131. Heart failure	5	....	..	..	..	..	..	..	..	..	..	1	2	2	..	..	..	4	1	....	2	3	....	1	4	....	..	1	1	..	1	..	1	..	..	1	..	..
132. Other ill-defined causes	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	5	....	12	....	....	12	....	....	2	1	1	2	..	..	2	2	.	2	..	..

CAUSES OF DEATHS BY TOWNS—BARRIE, 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. January.	February.	March	April.	May.	June.	July.	August.	September	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES. (A. *Epidemic Diseases*).																																						
Grand Total	108	....	1	..	1	..	1	..	3	11	8	7	6	9	25	12	.	55	51	....	70	36	....	41	64	....	17	12	6	11	8	6	6	4	8	7	13	8
Group Total	6	1	..	..	..	..	..	..	1	2	2	..	..	..	..	..	..	2	4	....	5	1	....	5	1	....	1	1	..	1	..	1	1	..	..	..	..	..
1. Typhoid Fever	5	....	..	..	..	..	..	..	1	2	2	..	..	..	..	..	..	2	3	....	4	1	....	4	1	....	1	1	..	1	..	1	1	..	..	..	..	..
6. Whooping cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..

(*B. Other General Diseases*).

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BARRIE.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII. THE PUERPERAL STATE.																																						
Group Total	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
106. Puerperal septicæmia	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
VIII.—DISEASES OF SKIN.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	....	5	....	....	5	..	....	..	1	..	2	1	1	..	..	..	..	..	..
117. Premature birth	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	1	..	1	..	..	..	..	..	..
118. Congenital debility	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	...	3	....	...	3	....	....	..	1	..	1	1	..	..	..	..	..	..	..
119. XII OLD AGE.																																						
Group Total	14	....	..	..	..	..	..	..	..	..	..	..	..	1	6	7	..	3	11	....	3	11	....	1	13	....	3	2	3	..	..	..	..	1	..	1	2	2
XIII VIOLENCE AND OTHER EXTERNAL CAUSES																																						
Group Total	6	....	..	..	..	..	..	..	1	4	..	..	..	..	..	1	..	6	....	....	4	2	....	3	3	....	..	..	..	..	1	1	2	..	1	1	..	..
121. Fractures and dislocations	1	....	.	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
127. Other accidental traumatisms	5	....	..	..	..	..	..	..	1	3	..	..	..	..	..	1	..	5	....	...	3	2	....	3	2	....	..	..	..	..	1	1	1	..	1	1	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	5	.	..	..	..	..	..	..	..	..	1	1	1	..	2	..	..	2	3	....	2	3	....	1	4	....	1	..	1	1	..	..	..	1	..	..	..	1
130. Dropsy	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	1	..	..	..	..	1
131. Heart failure	3	....	..	..	..	..	..	..	..	.	1	1	..	..	1	..	..	1	2	....	1	2	....	....	3	....	1	..	1	1	..	..	..	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	9	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	6	3	....	9	....	....	9	....	....	2	..	1	1	2	1	..	..	1	..	1	..

CAUSES OF DEATHS BY TOWNS—BERLIN, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	181	48	7	3	3	3	9	4	4	7	11	4	9	33	15	20	1	92	89		128	53		96	85		11	22	21	14	13	9	9	19	22	20	13	9
Group Total	25	7	2	2	2	1	4	2	2	..	..	..	1	..	..	2	..	12	13	....	23	2	....	22	3	....	2	3	3	2	1	3	1	2	..	2	3	1
4. Measles	5	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	1	1	1	..	..	1	..	1	..	..	..	..
6. Whooping Cough	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	2	..	..	..	..	..	..	1	..	1
7. Diphtheria and Croup	11	1	1	1	..	1	3	2	2	..	..	..	..	..	..	..	..	5	6	....	11	..	....	11	....	....	1	..	..	1	1	1	2	1	..	1	3	..
8. Influenza	3	....	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	2	1	....	1	2	....	....	3	....	..	..	2	..	..	..	1	..	..	..	..	..
9. Dysentery	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
10. Erysipelas	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
(*B.—Other General Diseases.*)																																					
Group Total	28	1	..	..	..	..	2	..	..	3	5	2	3	6	3	3	..	11	17	....	22	6	....	8	20	....	..	6	1	4	2	..	1	5	2	4	2	1
12. Septicæmia	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
13. Tuberculosis of lungs	5	....	..	..	..	..	..	..	..	2	1	1	1	..	..	..	..	3	2	....	5	....	....	2	3	....	..	1	1	..	..	..	1	1	..	1	..	..
15. Tuberculosis meningitis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
20. Tuberculosis of other organs	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
21. General Tuberculosis	4	....	..	..	..	..	1	..	..	..	2	..	1	..	..	..	..	....	4	....	4	....	....	3	1	....	..	1	..	1	..	..	..	1	1	..	..	..
25. Cancer of stomach and liver	5	....	..	..	..	..	1	..	..	..	..	..	1	..	2	1	..	....	5	....	3	2	....	1	4	....	..	..	..	1	1	..	..	..	1	..	2	..
26. Cancer of intestines	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
28. Cancer of breast	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	....	2	....	2	....	....	....	2	....	..	..	..	1	..	..	..	..	..	..	1	..
30. Cancer of other unspecified organs	3	....	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	2	1	....	2	1	....	....	3	....	..	2	..	..	..	..	1	..	..	..	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
34. Anæmia, leukæmia	4	....	..	..	..	..	..	..	..	1	..	..	..	2	..	1	..	2	2	....	2	2	....	1	3	....	..	1	..	..	1	..	..	..	1	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	25	8	1	..	..	..	..	..	..	1	2	..	2	6	3	2	..	13	12	....	18	7	....	13	12	....	2	5	3	1	3	..	1	2	3	2	2	1
39. Meningitis	5	3	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	2	3	....	5	....	....	3	2	....	..	1	1	1	..	..	..	..	2	..	..	..
42. Apoplexy	10	....	..	..	..	..	..	..	..	..	..	..	1	5	3	1	..	5	5	....	6	4	....	2	8	....	1	2	1	..	..	..	1	1	1	2	1	..
44. Paralysis	3	....	1	..	..	..	..	..	..	..	..	..	1	..	..	1	..	2	1	....	....	3	....	1	2	....	1	1	..	..	1	..	..	..	..	..	..	..
48. Epilepsy	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	....	2	....	..	2	....	....	..	..	..	..	..	..	..	..	..	1	1	..
49. Convulsions	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	..	1	1	..	2	..	..	1	..	..	..	..

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	14	....	..	..	..	..	1	..	2	1	..	..	1	5	2	2	..	7	7	....	8	6	....	4	10	....	1	..	..	1	.	..	..	4	5	2	1	..
53. Endocarditis	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
54. Heart disease	13	....	..	..	..	..	..	..	2	1	..	..	1	5	2	2	..	7	6	....	7	6	....	3	10	...	1	..	..	1	..	..	..	3	5	2	1	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	19	5	4	..	1	2	1	2	..	..	1	..	..	2	..	1	..	9	10	....	18	1	....	16	3	....	1	3	8	1	..	..	..	2	..	2	1	1
61. Diseases of larynx	1	1	..	..	..	.	..	..	..	.	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	.	..	..	..	..	..	..	..	..
63. Acute Bronchitis	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	1	1	..	..	..	..	..	..	..	..	..
64. Chronic bronchitis	2	....	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	....	2	....	1	1	....	....	2	...	..	..	..	..	..	..	..	..	1	..	..	1
65. Broncho-pneumonia	6	2	1	..	..	1	1	1	..	..	..	..	..	..	..	..	..	5	1	....	6	....	....	6	....	....	..	..	2	1	..	..	..	1	..	1	1	..
66. Pneumonia	6	1	1	..	1	1	..	1	..	..	1	..	..	..	..	..	..	3	3	....	6	....	....	6	....	....	..	2	4	..	..	..	..	..	..	..	..	..
67. Pleurisy	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	..	1	....	....	1	..	..	..	..	..	..	..	..	..	..	.
71. Hemorrhage of lungs	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM																																						
Group Total	14	5	..	1	..	..	1	..	..	1	2	..	..	2	1	1	..	9	5	....	10	4	....	8	6	....	1	2	..	2	..	2	..	..	2	3	1	1	..
74. Tonsilitis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	1	..	.	..	..	..	..	..	..	..	..	..
78. Other diseases of the stomach	4	3	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	4	....	....	3	1	....	3	1	....	..	..	..	..	..	1	..	..	1	1	1	..
80. Diarrhœa and enteritis (under 2 years)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	..	..	..	1	1	..	..	..
81. Diarrhœa and enteritis (2 years and over)	3	....	..	1	..	..	1	..	..	..	..	..	..	1	..	..	..	2	1	....	3	....	....	2	1	....	..	..	..	..	..	1	..	1	1	..	..	..
83. Obstruction of intestines	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
91. Peritonitis, non-puerperal	1	...	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
92. Appendicitis	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	...	2	....	....	1	1	....	..	2	..	..	..	..	..	..	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	6	....	..	..	..	..	..	..	..	..	..	1	1	4	..	..	..	4	2	....	3	3	....	....	6	....	..	..	1	..	1	1	..	..	1	2	..	..
95. Bright's diseases	3	....	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	3	....	....	1	2	....	....	3	....	..	..	..	..	1	..	..	..	2	..	..	..
96. Other diseases of kidneys	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
98. Diseases of bladder	2	....	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	..	..	1	..	..	1	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	....	1	1	....	1	1	....	..	1	..	..	..	..	..	..	..	..	1	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
111. Abscess	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
X. MALFORMATION.																																						
Group Total	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	...	.. .	3	....	....	..	..	1	..	1	..	..	..	..	.	1
116. Congenial malformations (still births excluded.)	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	1	..	1	..	..	..	..	..	..	1
XI. EARLY INFANCY.																																						
Group Total	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	3	....	10	....	....	10	....	....	1	..	..	..	1	..	2	..	2	2	1	1
117. Premature birth	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	....	6	....	....	6	....	....	..	..	..	..	1	..	1	..	1	2	..	1
118. Congenital debility	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	....	....	4	....	....	4	....	....	1	..	..	..	..	..	1	..	1	..	1	..

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BROCKVILLE—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	43	1	..	..	..	..	2	..	1	10	7	6	11	5	..	..	..	22	21	....	37	6	....	13	30	....	2	2	4	6	6	2	5	3	2	6	1	4
12. Septicæmia	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	1	..	....	..	1	....	..	..	..	..	..	..	1	..	..	..	..	..
13. Tuberculosis of lungs	14	1	..	..	..	..	..	..	..	4	4	2	3	..	..	..	..	6	8	....	14	..	....	7	7	....	1	1	2	2	2	..	3	1	..	1	..	1
14. Tuberculosis of larynx	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	....	1	..	....	..	1	....	..	..	..	..	..	..	..	..	..	1	..	..
15. Tuberculous meningitis	2	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	1	....	2	..	....	1	1	....	..	..	1	1	..	..	..	..	..	..	..	..
20. Tuberculosis of other organs	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	1	..	....	..	1	....	..	1	..	..	..	..	..	..	..	..	..	..
21. General Tuberculosis	3	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	1	2	....	2	1	....	2	1	....	..	..	..	..	..	1	1	1	..	..	..	..
23. Venereal diseases	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	..	..	..	1
25. Cancer of the stomach and liver	6	..	..	..	..	..	..	..	..	1	1	3	1	..	..	..	..	6	..	....	5	1	....	..	6	....	..	..	..	1	2	..	..	1	1	1	..
26. Cancer of Intestines	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	1	....	1	1	....	..	2	....	..	..	..	..	..	..	..	..	2	..	..
30. Cancer of other unspecified organs	3	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	3	....	3	..	....	1	2	....	1	..	..	..	..	..	..	..	1	..	1
31. Tumors	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	....	..	1	....	..	1	....	..	..	..	1	..	..	..	..	..	..	..	..
33. Diabetes	2	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	1	....	1	1	....	..	2	....	..	..	..	1	1	..	..	..	..	..	..	..
34. Anæmia, leukæmia	6	..	..	..	..	1	..	..	..	..	..	4	1	..	..	..	..	4	2	....	5	1	...	1	5	....	..	..	1	..	1	1	..	1	1	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	20	2	1	2	..	..	1	..	1	1	..	3	3	3	2	1	..	12	8	....	19	1	....	11	9	....	3	..	1	2	4	1	1	1	1	2	2	2
39. Meningitis	4	..	..	2	..	..	1	..	..	..	..	1	..	..	..	..	..	2	2	....	4	..	....	3	1	....	..	..	..	..	1	..	..	..	1	1	1	..
42. Apoplexy	7	..	..	..	..	..	..	..	..	..	..	1	1	3	2	..	..	3	4	....	6	1	....	1	6	....	..	..	1	2	1	1	1	..	..	..	..	1
44. Paralysis	3	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	2	1	....	3	..	....	3	..	....	2	..	..	..	..	..	..	1	..	..	..	..
47. Other diseases of brain	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1	..	....	..	1	....	1	..	..	..	..	..	..	..	..	..	..	..
48. Epilepsy	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	1	..	..	..	..	..	..	..
49. Convulsions	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	....	3	..	....	3	..	....	..	..	..	..	1	..	..	..	..	1	1	..
50. Tetanus	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	....	1	..	....	..	1	....	..	..	..	..	..	..	..	..	1	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM																																						
Group Total	16	..	..	..	..	..	..	..	..	..	..	..	2	5	5	3	1	12	4	....	8	7	1	1	14	1	..	3	..	1	1	3	..	1	1	3	1	2
53. Endocarditis	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	1	..	....	..	1	....	..	..	..	..	1	..	..	..	..	..	..	..
54. Heart disease	13	..	..	..	..	..	..	..	..	..	..	..	2	4	3	3	1	10	3	....	7	5	1	1	12	....	..	3	..	..	1	1	..	1	1	3	1	2
56. Diseases of arteries	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	....	..	2	....	..	1	1	..	..	..	..	1	..	1	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	17	3	1	1	..	..	..	..	1	..	1	2	3	2	1	2	..	10	7	....	15	2	....	6	11	....	5	3	1	3	2	2	..	..	..	1	..
61. Diseases of larynx	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	..	1	..	..	..	..	..
63. Acute bronchitis	2	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	....	2	..	....	1	1	....	..	1	..	..	..	..	..	..	..	..	1	..
64. Chronic bronchitis	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	....	..	1	....	..	1	....	1	..	..	..	..	..	..	..	..	..	..	..
65. Broncho-pneumonia	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	....	2	..	....	1	1	....	1	..	..	1	..	..	..	..	..	..	..	..
66. Pneumonia	10	1	..	1	..	..	..	..	..	..	1	2	1	2	1	1	..	6	4	....	9	1	....	2	8	....	3	2	1	1	2	1	..	..	..	..	..
69. Gangrene of lungs	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	1	..	..	..	..	..	..	..	..

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CAUSES OF DEATHS BY TOWNS IN COBOURG, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES. (*B. Other General Diseases.*)																																					
Grand Total	98	12	3	2	..	..	3	1	..	4	8	5	9	11	22	18	.	57	41	....	50	46	2	37	58	3	8	12	9	10	6	4	9	9	8	7	11	5
Group Total	12	....	..	..	..	..	1	..	..	1	3	1	4	1	..	1	..	6	6	....	5	7	...	8	4	....	1	..	1	3	2	..	1	1	1	..	..	2
13. Tuberculosis of lungs	4	....	..	..	..	..	..	..	.	1	2	1	..	..	..	.	..	3	1	....	2	2	....	4	....	....	1	..	1	1	..	..	..	..	..	..	..	1
21. General tuberculosis	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
24. Cancer of mouth	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	2	....	..	..	..	..	..	..	..	..	..	..	2	.	..	..	..	....	2	....	....	2	....	1	1	....	..	..	..	1	..	..	..	..	1	..	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
34. Anæmia, leukæmia	3	....	..	..	..	.	1	..	..	..	1	..	..	..	..	1	..	2	1	....	3	....	....	2	1	...	..	..	..	..	2	..	..	..	..	..	..	1
II.—DISEASES OF NERVOUS SYSTEM.																																					
Group Total	18	....	1	1	..	..	1	..	..	..	2	..	3	4	5	1	..	10	8	....	13	5	....	5	13	....	..	1	2	2	2	2	2	3	1	1	..
39. Meningitis	2	....	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	1	..	..	..	..	1	..	..	.
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
42. Apoplexy	7	....	..	..	..	..	..	..	..	..	1	..	1	2	3	..	..	4	3	....	5	2	....	....	7	....	..	1	1	..	2	1	..	1	1	..	..	..
43. Softening of brain	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
44. Paralysis	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	2	1	....	1	2	....	....	3	....	..	..	..	..	..	..	..	1	..	1	..	..
46. Other forms of mental disease	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
47. Other diseases of brain	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
48. Epilepsy	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
51. Other diseases of nervous system	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	...	....	1	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
III.—DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	7	....	..	..	.	..	..	..	..	..	..	..	..	1	5	1	..	7	....	....	1	6	....	....	7	....	..	2	..	1	..	..	1	..	..	..	3	..
53. Endocarditis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
51. Heart disease	5	....	..	..	..	..	..	..	..	..	..	..	..	1	3	1	..	5	....	....	1	4	....	....	5	....	..	1	..	1	..	..	1	..	..	..	2	..
56. Diseases of arteries	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	.	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
IV.—DISEASES OF RESPIRATORY SYSTEM.																																					
Group Total	11	1	1	..	..	..	..	1	..	..	..	..	..	1	4	3	..	6	5	....	4	7	....	3	8	....	3	2	2	1	1	..	..	..	..	1	1
63. Acute bronchitis	3	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	1	....	1	2	....	1	2	....	..	1	1	..	1	..	..	..	..	..	..	..
64. Chronic bronchitis	3	....	..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	1	2	....	1	2	....	1	2	....	3	..	..	..	..	..	..	..	..	..	..	..

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CAUSES OF DEATHS BY TOWNS—COLLINGWOOD, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct	Nov.	Dec.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	110	42	3	..	..	..	..	2	2	9	3	10	8	11	13	7	..	62	48	....	86	24	....	64	44	2	10	9	12	3	9	12	10	10	12	13	4	6
Group Total	11	7	1	..	..	..	..	1	1	1	..	..	..	..	..	..	..	5	6	....	10	1	....	10	1	....	1	..	..	..	1	..	2	1	1	2	..	..
1. Typhoid Fever	2	....	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	1	....	1	1	....	1	1	....	1	..	..	..	..	..	..	..	1	..	..	..
6. Whooping Cough	8	7	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	..	..	..	..	1	..	2	4	..	1	..	..
7. Diphtheria and Croup	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	20	....	..	..	..	..	..	..	..	5	3	2	4	2	1	3	..	9	11	....	16	4	....	10	10	....	1	1	3	2	2	2	2	3	1	1	..
13. Tuberculosis of lungs	2	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	..	..	..	..	1	..	1	..	..	..
19. White swelling	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
21. General tuberculosis	5	....	..	..	..	..	..	..	..	3	2	..	..	..	..	..	..	2	3	....	4	1	....	3	2	....	..	..	2	2	..	..	..	1	..	..	..	..
30. Cancer of other unspecified organs	4	....	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..	3	1	....	3	1	....	2	2	....	1	..	1	..	1	..	..	1	..	..	..	..
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
32. Rheumatism	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	1	1	..	..	..	..
33. Diabetes	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
34. Anæmia, leukæmia	3	....	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	2	....	2	1	....	1	2	....	..	..	..	..	1	1	..	..	1	..	..	..
37. Other general diseases	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	13	6	..	..	..	..	..	..	..	..	..	..	3	2	2	..	..	6	7	....	10	3	....	6	7	....	1	2	1	1	..	1	3	..	2	1	..	1
39. Meningitis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
42. Apoplexy	4	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	1	3	....	3	1	....	....	4	....	..	..	..	1	..	1	2	..	..	..	..	..
41. Paralysis	3	....	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	2	1	....	1	2	....	....	3	....	..	..	..	..	..	..	..	..	2	1	..	..
49. Convulsions	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	....	5	....	....	5	....	....	1	2	..	..	..	..	1	..	..	..	..	1
III. DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	1	1	....	....	2	....	..	..	1	..	..	..	..	..	..	1	..	..
54. Heart Disease	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	....	1	1	....	....	2	....	..	..	1	..	..	..	..	..	..	1	..	..

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COLLINGWOOD—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	6	....	..	..	..	..	..	..	..	..	..	1	3	..	2	..	..	4	2	....	4	2	....	1	5	....	..	1	1	..	2	..	1	..	..	..	..	1
131. Heart Failure	6	....	..	..	..	..	..	..	..	..	..	1	3	..	2	..	..	4	2	....	4	2	....	1	5	....	..	1	1	..	2	..	1	..	..	..	..	1
134. XV. STILL BIRTHS.																																						
Group Total	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	....	10	....	....	10	....	....	..	..	1	..	..	1	1	..	1	3	..	3

CAUSES OF DEATHS BY TOWNS, IN CORNWALL, 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	160	34	5	4	2	1	1	2	6	12	10	11	13	19	17	23	..	82	78	..	123	34	3	79	78	3	11	12	15	15	14	15	11	21	10	11	14	11
Group Total	8	....	..	1	1	1	..	..	..	.	2	1	..	1	..	1	..	6	2	....	6	2	....	5	3	....	1	1	3	1	..	..	..	..	..	..	..	2
1. Typhoid Fever	5	....	..	..	..	..	..	..	..	2	1	1	..	1	..	..	..	5	....	....	3	2	....	3	2	....	1	1	1	1	..	..	..	..	..	..	..	1
6. Whooping Cough	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
7. Diphtheria and Croup	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
8. Influenza	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																						
Group Total	35	1	1	1	..	1	..	1	1	7	2	3	6	4	2	5	..	15	20	....	27	8	....	15	19	1	2	.	3	6	8	5	1	3	3	1	..
12. Septicæmia	3	....	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	1	2	....	2	1	....	....	3	....	..	..	..	1	1	1	..	..	..	..	..	..
15. Tuberculous Meningitis	3	....	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	2	.	..	..	..	..	..	1	..
20. Tuberculosis of other organs	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	1	....	2	....	....	1	1	....	1	..	1	..	..	..	..	..	..	..	..	..

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CORNWALL.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII. THE PUERPERAL STATE.																																						
Group Total	2	....	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	.	1	..	..	..	..	..	..	1	..
106. Puerperal septicæmia	1	....	..	..	..	.	..	..	..		1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..
108. Other causes incident to childbirth	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	....	....	....	2	....	....	2	....	..	..	..	..	..	..	..	1	1	..	..	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
111. Abscess	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	..	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
IX. DISEASES OF LOCOMOTOR SYSTEM.																																						
Group Total	1	...	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
113. Diseases of the bones	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	...	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
XI. EARLY INFANCY.																																						
Group Total	16	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	8	....	16	....	....	16	....	....	..	3	3	1	..	1	..	1	3	1	1	2
117. Premature birth	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
118. Congenital debility	15	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	7	....	15	....	...	15	....	....	..	3	3	1	..	..	..	1	3	1	1	2
119. XII. OLD AGE.																																						
Group Total	17	....	..	..	..	..	..	..	..	..	..	..	..	..	4	13	..	7	10	...	12	4	1	5	12	....	4	2	1	1	..	1	..	1	.	3	2	2
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	7	1	..	1	..	..	..	1	1	..	..	1	1	..	..	1	..	6	1	....	7	....	....	6	1	....	..	..	..	..	..	2	2	3	..	..	..	..
120. Suicides	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
122. Burns and scalds	3	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	3	....	....	3	....	....	2	1	....	..	..	.	..	..	1	1	1	..	..	..	..
124. Drowning	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
127. Other accidental traumatisms	2	....	..	..	.	..	..	1	..	..	..	..	1	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	..	..	..	..	2	..	..	..	..
XIV. ILL-DEFINED DISEASES.																																						
Group Total	2	....	..	..	..	..	..	..	..	.	1	..	..	..	..	1	..	1	1	....	....	1	1	....	2	....	1	..	..	.	..	1	..	..	..	..	..	..
131. Heart failure	2	....	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	1	....	....	1	1	....	2	....	1	..	..	..	..	1	..	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	....	6	....	....	6	....	....	..	..	..	1	1	1	1	..	..	1	..

CAUSES OF DEATHS BY TOWNS—GALT, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	133	31	1	2	..	1	15	2	1	3	7	12	8	12	15	21	2	59	73	1	82	46	5	59	72	2	11	11	10	11	17	12	11	7	19	8	8	6
Group Total	8	1	..	..	..	..	2	1	..	..	1	..	..	1	1	..	1	....	8	....	7	1	..	5	3	....	..	2	..	..	1	..	..	1	2	..	2	.
1. Typhoid fever	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	..	1	....	....	..	..	..	..	..	..	..	1	..	..	..	.
7. Diphtheria and Croup	3	....	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	....	3	....	3	....	..	3	....	....	..	..	..	..	..	..	..	..	1	..	2	.
8. Influenza	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	....	2	....	1	1	....	....	2	....	..	2	..	..	..	..	..	..	..	..	..	.
9. Dysentery	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	.
10. Erysipelas	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	.
(*B. Other General Diseases.*)																																					
Group Total	20	....	..	..	..	..	..	.	1	2	2	8	2	2	3	..	..	10	10	....	13	6	1	3	17	....	2	..	1	1	3	2	3	1	3	1	1	2
13. Tuberculosis of lungs	2	....	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	1	..	..	..	..	..	..	1
16. Abdominal tuberculosis	2	....	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	2	....	....	1	1	....	1	1	....	..	..	..	..	..	..	1	..	1	..	..	.
21. General tuberculosis	7	....	..	..	..	..	..	..	..	2	2	3	..	..	..	..	..	4	3	....	4	3	....	2	5	....	1	..	1	1	1	1	1	1	..	..	..	.
26. Cancer of intestines	2	....	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	2	....	....	1	1	....	....	2	....	..	..	..	..	..	..	1	..	..	..	..	1
27. Cancer of genital organs	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	....	1	....	1	....	..	..	..	..	..	..	1	..	..	..	..	.
30. Cancer of other unspecified organs	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	1	1	....	....	2	....	1	..	..	..	..	..	..	1	..	..	..	.
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	.
33. Diabetes	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	.
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	1	..	..	1	..	..	..	.
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	11	1	..	..	..	..	..	..	..	..	1	..	1	2	3	2	1	3	8	....	5	5	1	3	7	1	2	..	..	..	..	2	1	1	2	1	2	.
39. Meningitis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	.
42. Apoplexy	5	....	..	..	..	..	..	..	..	..	..	..	1	..	3	..	1	2	3	....	3	1	1	1	3	1	2	..	..	..	..	1	..	..	1	..	1	.
44. Paralysis	2	....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	....	2	....	....	2	....	....	2	....	..	..	..	..	..	..	1	..	..	1	..	.
49. Convulsions	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	.
51. Other diseases of nervous system	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	....	2	....	....	2	....	1	1	....	..	..	..	..	..	..	1	..	1	..	..	.

GALT.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	12	....	..	..	..	..	..	..	..	2	1	.	2	4	2	1	..	4	8	....	8	3	1	2	10	....	1	..	..	2	2	3	2	1	..	1	..	..
54. Heart disease	9	....	..	..	..	..	..	..	..	.	1	..	2	3	2	1	..	2	7	....	7	1	1	1	8	....	..	..	..	2	2	2	1	1	..	1	..	..
56. Diseases of arteries	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..
58. Diseases of Veins	1	....	..	.	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																					
Group Total	16	2	1	2	..	1	..	..	..	..	2	4	2	..	..	2	..	7	9	....	9	6	1	6	10	....	2	1	1	1	5	1	1	..	..	..	4
63. Acute bronchitis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	2	..	..	..	..	..	..
64. Chronic bronchitis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
65. Broncho-Pneumonia	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	1	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
66. Pneumonia	10	....	1	2	..	..	..	..	..	2	3	2	..	..	..	..	..	5	5	....	6	3	1	3	7	....	..	1	1	1	3	..	1	..	..	..	3
67. Pleurisy	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	.	..	..	..	1	..	..	..	..	..	..
68. Congestion of Lungs	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
V. DISEASES OF DIGESTIVE SYSTEM.																																					
Group Total	14	8	..	..	..	..	1	..	..	2	..	..	..	1	2	..	..	9	5	....	11	3	....	11	2	1	1	..	1	..	1	..	1	1	4	4	..	1
77. Gastritis	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	....	1	..	..	1	..	..	..	..	..	..	..	..	..
78. Other diseases of stomach	2	....	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	1	....	1	1	....	1	1	....	1	..	..	..	1	..	..	..	..	..	..	..
80. Diarrhœa and enteritis (under 2 years)	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	....	6	....	....	6	....	....	..	..	..	..	..	..	1	1	2	2	..	..
81. Diarrhœa and enteritis (2 years and over)	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
88. Biliary calculi	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
92. Appendicitis	3	1	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	..	..	..	..	..	..	..	2	1	..	..
VI. DISEASE OF GENITO-URINARY SYSTEM.																																					
Group Total	4	....	..	..	..	.	1	..	..	..	..	..	1	2	..	..	..	2	2	....	4	....	....	2	2	....	..	..	..	..	1	1	..	..	..	..	2	..
94. Acute nephritis	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	.	..	..	..	..	..	..	..	..	1	..
95. Bright's Disease	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	....	....	2	....	....	1	1	....	..	..	..	..	1	1	..	..	..	..	..	..
100. Uterine tumor	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
XI. EARLY INFANCY.																																					
Group Total	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	4	....	10	....	....	10	....	....	1	.	1	2	..	1	1	..	2	1	1	..
117. Premature birth	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	....	6	....	....	6	....	....	1	..	1	1	..	..	1	..	1	..	1	..
118. Congenital debility	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	....	4	....	....	4	....	....	..	..	..	1	..	1	..	..	1	1	..	..

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HAWKESBURY—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases).																																					
Group Total	12	..	..	..	..	..	..	2	..	1	1	2	1	3	2	..	..	4	8	....	12	....	....	4	7	1	2	1	1	1	1	..	2	2	..	1	..	1
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
13. Tuberculosis of lungs	3	....	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	1	2	....	3	....	....	1	2	....	1	..	1	..	..	..	..	..	..	1	..	..
21. General tuberculosis	5	....	..	..	..	..	..	1	..	1	1	1	1	..	..	..	..	1	4	....	5	....	....	3	2	....	1	1	..	1	..	..	1	..	..	..	..	1
30. Cancer of other unspecified organs	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	....	2	....	....	....	2	....	..	..	..	..	..	..	1	1	..	..	..	..
31. Tumors	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	....	1	..	..	..	..	1	..	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM																																					
Group Total	7	2	1	..	..	..	..	2	..	..	..	1	..	..	..	1	..	6	1	....	6	1	....	6	1	....	..	1	1	2	1	..	1	..	..	..	1	..
38. Encephalitis	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
39. Meningitis	3	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	....	....	..	1	1	..	..	..	1	..	..	..	..	..
44. Paralysis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	....	....	....	1	....	..	1	....	..	..	..	1	..	..	..	..	..	..	..	..
48. Epilepsy	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
49. Convulsions	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	3	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	2	....	2	1	....	1	2	....	..	..	..	..	1	..	..	..	..	..	2	..
53. Endocarditis	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
51. Heart Disease	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
60. Other diseases of circulatory system	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																					
Group Total	17	6	..	3	2	..	..	..	1	3	..	1	..	..	..	1	..	9	8	....	16	1	...	14	2	1	1	1	3	2	..	7	1	.	..	1	1
66. Pneumonia	17	6	..	3	2	..	..	..	1	3	..	1	..	..	..	1	..	9	8	....	16	1	....	14	2	1	1	1	3	2	..	7	1	..	..	1	1
V. DISEASES OF DIGESTIVE SYSTEM.																																					
Group Total	5	4	..	..	..	..	1	.	..	..	..	..	..	..	..	..	..	4	1	....	5	...	....	5	....	....	..	..	..	1	1	..	2	..	..	..	..	1
78. Other diseases of the stomach	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	...	....	..	..	..	..	..	..	1	..	..	..	..	..
80. Diarrhœa and enteritis	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	3	....	....	3	...	....	..	..	..	1	1	..	1	..	..	..	..	..
91. Peritonitis, non puerperal	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	1	...	....	2	....	....	..	..	..	..	..	..	..	..	..	..	..	1

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CAUSES OF DEATHS BY TOWNS—KENORA, 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not given.	Male.	Female.	Not stated.	Canadian.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	265	32	7	3	3	4	4	4	12	67	45	23	15	11	4	8	22	214	51	....	89	145	31	129	70	66	24	10	17	13	16	33	23	26	24	20	24	35
Group Total	51	4	2	1	2	3	1	..	5	17	10	4	..	1	..	..	1	38	13	....	20	27	4	31	13	7	5	1	2	1	3	2	3	9	7	7	3	8
1. Typhoid Fever	37	....	..	1	..	1	1	..	4	14	10	4	..	1	..	..	1	30	7	....	9	25	3	18	12	7	4	..	2	1	2	1	..	5	5	7	3	7
4. Measles	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
5. Scarlet Fever	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
6. Whooping Cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
7. Diphtheria and Croup	7	1	1	..	1	1	..	..	..	3	..	..	..	..	..	..	..	5	2	....	5	1	1	7	....	....	1	1	..	..	1	..	3	..	1	..	..	.
9. Dysentery	4	2	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	3	....	3	1	....	4	....	....	..	..	..	..	..	..	..	4	..	..	..	..
(*B. Other General Diseases*).																																					
Group Total	22	....	..	..	..	..	..	1	3	6	4	6	1	1	..	..	..	14	8	....	6	13	3	8	6	8	3	1	..	..	2	5	3	1	3	..	1	3
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..
13. Tuberculosis of lungs	2	....	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	1	....	1	....	1	....	1	1	..	..	..	..	..	1	..	..	..	..	1	..
15. Tuberculous meningitis	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
21. General tuberculosis	13	....	..	..	..	..	..	3	4	3	3	..	..	..	..	..	..	7	6	....	3	10	....	5	3	5	2	1	..	..	4	2	..	3	..	..	1
30. Cancer of other unspecified organs	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
33. Diabetes	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..
35. Alcoholism	3	....	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	2	1	....	....	1	2	1	....	2	1	..	..	..	1	..	..	..	..	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	16	5	1	1	1	..	..	1	..	1	1	..	2	1	1	..	1	10	6	....	11	4	1	9	6	1	1	2	..	1	1	1	2	2	1	1	3	1
39. Meningitis	3	....	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	2	1	....	1	1	1	2	....	1	..	1	..	..	..	1	..	..	..	..	..	1
42. Apoplexy	3	....	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	1	2	....	1	2	....	....	3	....	....	..	..	..	..	..	1	1	..	..	1	..
44. Paralysis	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	....	2	....	1	1	....	....	2	....	..	..	..	..	..	..	1	1	..	..	..	..
49. Convulsions	8	5	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	7	1	....	8	....	....	7	1	....	1	1	..	1	1	..	1	..	..	1	2	..
III. DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	9	....	..	..	..	..	..	1	..	3	..	..	2	3	..	..	..	6	3	....	2	5	2	3	4	2	..	..	..	1	..	1	2	2	1	..	..	2
54. Heart disease	7	....	..	..	..	..	..	1	..	3	..	..	1	2	..	..	..	5	2	....	1	4	2	3	2	2	..	..	..	1	..	1	2	2	..	..	..	1
60. Other diseases of the circulatory system	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	..	..	..	..	..	1	..	..	1

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CAUSES OF DEATHS BY TOWNS—LINDSAY, 1907.

Causes of Death.	Total.	Ages.															Sex.			Nativity.			Social Con.			Month.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39	40-49.	50-59.	60-69.	70-79.	80 and over	Not stated.	Male.	Female.	Not stated	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	111	26	4	2	4	..	..	..	2	9	7	11	6	13	12	13	..	61	50	....	88	21	2	53	57	1	13	13	13	10	14	13	6	4	7	4	8	5
Group Total	6	1	1	1	..	..	..	..	..	2	..	..	..	..	..	1	..	3	3	....	4	2	....	5	1	....	1	2	..	1	..	1	..	1	..	..	..	..
1. Typhoid Fever	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	....	1	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
4. Measles	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
6. Whooping Cough	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
7. Diphtheria and Croup	1	....	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
10. Erysipelas	2	....	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	1	....	1	1	....	1	1	....	..	1	..	..	..	..	..	1	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	18	....	..	1	1	..	..	..	1	5	3	2	2	3	..	..	..	11	7	....	18	....	.	8	10	....	2	1	1	3	3	1	1	1	1	2	1
13. Tuberculosis of lungs	7	....	..	..	..	..	..	..	1	2	2	2	..	..	..	..	..	5	2	....	7	....	..	5	2	....	..	..	..	2	2	1	..	..	1	1	..
21. General Tuberculosis	3	....	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..	3	....	....	3	....	....	2	1	....	1	..	1	..	..	..	1	..	..	..	..	..
26. Cancer of Intestines	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
30. Cancer of other unspecified organs	3	....	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	1	2	....	3	....	....	....	3	....	..	..	..	1	1	..	..	..	1	..	..
33. Diabetes	2	....	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	....	2	....	....	1	1	....	..	1	..	..	..	..	1	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	....	2	....	....	....	2	....	1	..	..	..	..	..	..	..	..	1	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	21	3	..	..	1	..	..	..	..	..	2	2	..	4	4	5	..	11	10	....	13	8	....	6	15	....	3	3	2	1	2	3	3	..	3	..	1	..
39. Meningitis	4	2	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	2	2	....	4	....	....	3	1	....	..	1	..	..	..	..	1	.	1	..	1	..
42. Apoplexy	8	....	..	..	..	..	..	..	..	..	2	..	3	1	2	..	..	2	6	....	4	4	....	1	7	....	2	..	1	..	1	2	2	..	..	..	..	..
44. Paralysis	7	..	..	..	..	..	..	..	..	..	1	..	..	1	2	3	..	5	2	....	3	4	..	....	7	....	1	2	1	1	1	1	..	..	..	..	..	..
47. Other diseases of brain	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
49. Convulsions	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM																																					
Group Total	6	....	..	..	..	..	..	..	..	..	2	1	..	..	3	..	..	2	4	....	4	2	....	....	6	....	1	..	2	..	1	..	1	..	..	1	..	..
54. Heart disease	4	....	..	..	..	..	..	..	..	1	1	..	..	2	..	..	..	2	2	....	2	2	....	....	4	....	1	..	..	..	1	..	1	..	..	1	..	..
55. Angina pectoris	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
57. Embolism and thrombosis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..

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CAUSES OF DEATHS BY TOWNS—OWEN SOUND, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																			
		0.1	1.	2.	3.	4.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	227	56	6	1	5	3	4	4	5	22	17	14	23	18	23	26	..	114	113	....	180	47	....	111	115	1	24	19	27	14	30	17	11	14	17	17	16	21
Group Total	16	4	1	..	3	1	2	1	..	2	1	..	..	..	1	..	..	8	8	....	14	2	....	15	1	....	1	1	..	..	..	..	1	2	4	3	..	4
1. Typhoid Fever	3	....	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	3	....	....	2	1	....	3	....	....	..	..	..	..	..	..	..	1	1	..	1
4. Measles	3	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	..	..	..	..	..	..	..	..	3
5. Scarlet Fever	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	2	1	....	3	....	....	..	..	..	..	..	..	..	1	2	..	..	..
7. Diphtheria and Croup	4	....	..	..	2	1	..	1	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	..	..	..	..	..	..	1	1	2	..	..
9. Dysentery	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
10. Erysipelas	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	39	1	..	..	1	..	..	1	2	9	8	5	5	3	3	1	..	18	21	....	33	6	....	15	23	1	7	2	3	2	4	3	2	3	2	4	5	2
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..
13. Tuberculosis of lungs	13	....	..	..	..	..	..	1	1	6	4	..	1	..	..	..	..	4	9	....	13	....	....	7	6	....	3	..	1	1	2	..	1	1	1	2	1	..
15. Tuberculous Meningitis	2	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	1	..	..	1	..	..	..	..	..
21. General Tuberculosis	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	1	..	..	..	..	1	..	..	..	..
23. Venereal Diseases	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
25. Cancer of stomach and liver	3	....	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	2	1	....	2	1	....	....	3	....	1	1	..	..	..	..	..	..	..	..	..	1
26. Cancer of Intestines	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	1	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	2	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	..	..	1	..	..	..	..	..	..
31. Tumors	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
32. Rheumatism	2	....	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	2	....	....	2	....	....	1	1	....	1	..	..	..	..	..	..	..	..	1	1	..
33. Diabetes	2	....	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	1	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	..	1	..	..
34. Anæmia, leukæmia	6	....	..	..	..	..	..	..	..	2	1	..	1	..	1	1	..	3	3	....	5	1	....	1	4	1	2	..	1	..	1	1	..	1	..	..	..	..
37. Other general diseases	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	..	..	..	..	..	1	..

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OWEN SOUND.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII.—THE PUERPERAL STATE.																																						
Group Total	3	....	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	...	3	....	3	....	....	....	3	....	..	1	..	1	..	..	..	..	..	1	..	..
107. Puerperal convulsions	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
108. Other causes incident to childbirth	2	....	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	1	..	..	..	..	..	1	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
116. Congenital malformations (still-births excluded)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
XI. EARLY INFANCY.																																						
Group Total	14	14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	6	....	14	....	....	14	....	....	1	3	..	..	1	..	2	3	2	..	1	1
117. Premature Birth	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	....	6	....	....	6	....	....	1	..	..	..	..	..	1	1	1	..	1	1
118. Congenital debility	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	..	3	..	..	1	..	1	2	1	..	..	..
119. XII.—OLD AGE.																																						
Group Total	19	....	..	..	..	..	..	.	..	..	..	..	..	..	4	15	..	10	9	....	4	35	....	1	18	....	4	4	1	3	5	1	..	.	..	..	..	1
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	5	....	..	..	..	..	..	..	..	3	1	1	..	..	..	..	..	4	1	....	5	....	....	....	5	....	..	..	2	..	..	1	..	..	..	..	1	1
122. Burns and scalds	1	....	..	..	.	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
127. Other accidental traumatisms	3	....	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	3	....	....	3	....	....	....	3	....	2	..	..	..	..	..	..	..	..	..	..	1
XIV. ILL-DEFINED DISEASES.																																						
Group Total	7	2	..	..	..	..	..	..	..	..	..	..	2	1	1	1	..	4	3	....	4	3	....	2	5	....	1	..	1	..	1	3	1	..	..	..	..	..
130. Dropsy	2	....	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	....	1	1	....	....	2	....	1	..	..	..	..	1	..	..	..	..	..	..
131. Heart Failure	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	2	1	...	3	2	....	....	3	....	..	..	..	1	..	.	2	..	..	..	..	..
132. Other ill-defined causes	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	1	..	1	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	2	....	11	....	....	11	....	....	..	1	2	1	3	2	1	..	..	..	1	..

CAUSES OF DEATHS BY TOWNS—PEMBROKE, 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		0.1.	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	**105**	**39**	**4**	**2**	**2**	**1**	..	**4**	**5**	**9**	**4**	**2**	**6**	**13**	**9**	**4**	**1**	**57**	**48**	....	**89**	**16**	....	**68**	**36**	**1**	**12**	**16**	**5**	**7**	**7**	**4**	**6**	**13**	**13**	**9**	**1**	**12**
Group Total	8	3	2	..	..	..	..	1	1	1	..	..	..	..	..	..	..	5	3	....	7	1	....	8	....	....	1	1	..	..	..	..	..	..	2	..	..	4
1. Typhoid fever	3	....	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	2	1	....	2	1	....	3	....	....	..	..	..	..	..	..	..	..	2	..	..	1
4. Measles	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
5. Scarlet fever	2	....	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	..	..	..	2
7. Diphtheria and Croup	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
8. Influenza	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
(*B. Other General Diseases.*)																																					
Group Total	15	....	..	..	1	..	..	..	3	5	..	..	2	3	1	..	..	8	7	..	13	2	....	8	7	....	1	4	..	3	1	..	1	1	2	1	..	1
13. Tuberculosis of lungs	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
15. Tuberculous meningitis	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
21. General tuberculosis	5	....	..	..	..	..	..	..	1	3	..	..	1	..	..	..	..	3	2	....	5	....	....	3	2	....	..	1	..	1	..	..	..	..	2	1	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	1	....	1	1	....	....	2	....	..	1	..	..	..	..	1	..	..	..	..	..
32. Rheumatism	2	....	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	1	....	2	....	....	....	2	....	..	..	..	1	..	..	..	..	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	1	..	..	..	..	..	..	..	..	..	..
37. Other general diseases	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	12	1	....	..	1	1	..	2	..	..	..	..	1	2	2	1	1	..	7	5	....	8	4	....	5	7	....	..	1	1	..	1	1	2	2	2	1	..	1
39. Meningitis	5	1	..	..	1	1	..	2	..	..	..	..	..	..	..	..	..	2	3	....	4	1	....	5	....	....	..	..	..	..	..	..	..	..	2	2	..	..	1
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..
42. Apoplexy	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	....	....	1	1	....	....	2	....	..	1	..	..	..	..	..	..	..	1	..	..	..
43. Softening of brain	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..
44. Paralysis	3	....	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	2	1	....	1	2	....	....	3	....	..	..	..	1	..	1	1	..	..	..	..	..

PEMBROKE.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
III. DISEASES OF CIRCULATORY SYSTEM.																																					
Group Total	3	1	..	..	..	..	..	..	..	..	..	.	1	..	1	..	..	2	1	....	2	1	....	1	2	....	..	..	1	..	1	..	..	..	..	1	..	..
54. Heart disease	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	....	....	1	1	....	....	2	....	..	..	..	..	1	..	..	..	1	..	..
60. Other diseases of circulatory system	1	1	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																					
Group Total	14	4	1	2	..	..	..	..	..	1	1	1	..	2	2	..	..	7	7	....	14	....	....	8	6	....	4	3	1	1	1	2	..	1	..	..	..	1
63. Acute bronchitis	5	2	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	3	2	....	5	....	....	4	1	....	2	..	..	1	..	1	..	1	..	..	..	..
66. Pneumonia	8	2	..	1	..	..	..	..	..	1	1	1	..	1	1	..	..	4	4	....	8	....	....	4	4	....	2	3	1	..	1	1	..	.	..	..	..	..
67. Pleurisy	1	....	.	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
V. DISEASES OF DIGESTIVE SYSTEM.																																					
Group Total	13	11	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	6	7	....	13	....	....	13	....	....	..	..	..	..	1	..	..	6	3	2	..	1
80. Diarrhœa and enteritis, (under 2 years)	12	11	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	7	....	12	....	....	12	....	....	..	..	..	..	..	..	..	6	3	2	..	1
92. Appendicitis	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																					
Group Total	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	....	1	1	....	1	1	....	..	1	..	..	..	..	1	..	..	..	..	..
95. Bright's disease	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
96. Other diseases of kidneys	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
VII. THE PUERPERAL STATE.																																					
Group Total	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
107. Puerperal convulsions	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
VIII DISEASES OF SKIN.																																					
Group Total	2	....	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	....	2	....	1	....	....	1	1	....	..	.	..	..	.	..	..	..	..	1	..	1
111. Abscess	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
112. Other diseases of skin	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
XI. EARLY INFANCY.																																					
Group Total	9	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	3	....	9	....	....	9	....	....	3	1	1	..	1	..	..	1	1	..	1	..
117. Premature birth	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	3	....	....	3	....	....	2	..	1	..	..	..	..	..	..	..	..	..
118. Congenital debility	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	....	6	....	....	6	....	....	1	1	..	..	1	..	..	1	..	1	..	..

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	25	2	..	..	..	..	1	1	1	2	5	1	1	7	2	1	1	6	19	....	17	8	....	12	13	....	..	5	..	1	3	2	2	2	3	1	4
13. Tuberculosis of lungs	2	..	..	..	..	..	..	..	..	.	1	..	1	..	..	..	..	....	2	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	1	..	1
15. Tuberculous meningitis	2	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	1	..	..	1	..	..	..
20. Tuberculosis of other organs	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..
21. General Tuberculosis	4	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	2	2	....	4	....	....	3	1	....	..	2	..	..	..	..	..	1	..	1	..
23. Venereal diseases	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1
24. Cancer of mouth	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..
25. Cancer of stomach and liver	3	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	1	2	....	2	1	....	1	2	....	..	1	..	..	..	..	..	..	..	..	2
30. Cancer of other unspecified organs	3	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	2	....	2	1	....	....	3	....	..	..	..	..	1	..	1	1	..	..	..
32. Rheumatism	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..
33. Diabetes	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..
34. Anæmia, leukæmia	5	..	..	..	..	..	..	..	..	..	1	..	..	3	1	..	..	2	3	....	2	3	....	1	4	....	..	1	..	1	1	..	1	..	..	1	..
37. Other general diseases	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	13	..	..	..	..	1	1	1	..	1	1	..	2	3	3	..	..	8	5	....	9	4	....	4	9	....	..	..	2	2	1	3	1	..	2	1	..	1
39. Meningitis	3	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	1	2	....	3	....	....	2	1	....	..	..	1	..	..	..	..	..	1	..	..	1
42. Apoplexy	5	..	..	..	..	..	..	..	..	..	..	1	..	..	1	3	..	3	2	....	4	1	....	....	5	....	..	..	..	1	1	..	1	..	1	1	..	..
43. Softening of brain	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
44. Paralysis	3	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	2	1	....	1	2	....	1	2	....	..	..	1	..	..	2	..	..	..	..	..	..
49. Convulsions	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	....	....	1	....	1	..	....	..	..	..	1	..	..	..	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	14	..	..	..	..	..	..	..	..	..	..	3	1	4	2	4	..	9	5	....	7	7	....	3	11	....	2	2	3	2	1	..	..	..	..	2	2
54. Heart Disease	7	..	..	..	..	..	..	..	..	..	..	2	..	2	1	2	..	6	1	....	3	4	....	2	5	....	1	1	2	1	1	..	..	..	..	1	..
55. Angina pectoris	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	..	..	..	1
56. Diseases of arteries	4	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	..	1	3	....	2	2	....	....	4	....	1	1	..	..	..	..	..	..	..	1	1
57. Embolism and thrombosis	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	....	1	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1	..	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	16	3	1	1	..	1	1	..	..	1	..	..	..	2	4	2	..	10	6	....	10	6	....	9	7	....	1	7	3	1	1	..	..	..	1	..	..	2
63. Acute bronchitis	5	..	1	1	..	..	1	..	..	..	..	..	..	2	..	..	..	3	2	....	3	2	....	4	1	....	..	3	2	..	..	..	..	..	..	..	..	..
65. Broncho-pneumonia	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	1	..	..	..	..	..	..	..	..	..	..
66. Pneumonia	7	2	..	..	..	..	..	..	..	..	..	..	..	2	1	2	..	4	3	....	4	3	....	3	4	....	..	3	..	1	1	..	..	..	1	..	..	1
67. Pleurisy	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	..	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
70. Asthma and emphysema	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	1	..	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
72. Other diseases of respiratory system, phthisis excepted	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	1	..	..	..	..	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	16	9	1	..	..	..	..	1	..	..	1	2	..	1	..	1	..	10	6	....	12	4	....	13	3	....	1	..	..	..	1	..	2	2	7	1	1
77. Gastritis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	1	..	....	..	..	..	..	..	..	..	1	..	..	..	..

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CAUSES OF DEATH BY TOWNS—SAULT ST. MARIE, 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Month.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	140	44	3	2	2	2	5	1	3	15	19	9	14	6	3	8	4	89	50	1	86	38	16	88	42	10	9	14	9	11	14	13	11	9	11	13	14	12
Group Total	13	2	..	1	..	1	..	..	..	4	2	1	..	..	..	..	2	11	2	....	9	4	...	11	2	....	3	1	1	..	1	..	2	1	..	2	..	2
1. Typhoid fever	8	....	..	1	..	..	..	..	..	2	2	1	..	..	..	..	2	6	2	....	5	3	....	6	2	....	..	1	1	..	..	..	1	1	..	2	..	2
4. Measles	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	1	..	..	..	1	..	..	..	..	..	..	..
7. Diphtheria and Croup	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
9. Dysentery	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
10. Erysipelas	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	56	2	..	..	..	..	..	..	..	2	7	3	6	2	2	..	2	14	12	....	17	6	3	7	17	2	2	2	1	3	..	2	5	1	..	2	5	3
12. Septicæmia	3	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	2	....	3	....	....	2	1	....	..	1	..	..	..	..	..	..	..	..	..	2
13. Tuberculosis of lungs	10	1	..	..	..	..	..	..	..	4	1	2	..	1	..	1	..	6	4	....	6	3	1	4	6	....	1	1	1	..	..	1	1	1	..	..	3	1
15. Tuberculous meningitis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
19. White swelling	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
21. General tuberculosis	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	....	....	1	..	..	..	..	1	..	..	..	..	..	..	..
28. Cancer of breast	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	1	..	..	..	..	1	..
30. Cancer of other unspecified organs	4	....	..	..	..	..	..	..	..	..	1	..	1	1	1	..	..	1	3	....	3	....	1	....	4	....	1	..	..	2	..	..	..	..	..	1	..	..
31. Tumors	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
34. Anæmia, leukæmia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..
35. Alcoholism	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	15	5	2	1	1	..	3	..	..	..	..	1	..	2	..	..	..	8	7	....	13	1	1	13	2	....	1	5	..	..	4	1	..	..	1	1	1	1
39 Meningitis	8	2	2	..	1	..	3	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	..	3	..	..	2	1	..	..	1	..	1	..
42. Apoplexy	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	1	....	1	....	1	1	1	....	..	1	..	..	1	..	..	..	..	..	..	..
49. Convulsions	5	3	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	3	2	....	4	1	....	4	1	....	1	1	..	..	1	..	..	..	1	..	..	1

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SAULT STE. MARIE—*Continued.*

Number of column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	7	2	..	..	..	..	..	..	..	1	2	..	1	..	..	1	..	4	3	....	3	3	1	4	3	....	..	1	1	1	3	..	..	..	..	1	..	..
131. Heart failure	3	....	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	1	2	....	1	2	....	....	3	..	..	..	..	1	1	..	..	..	..	1	..	..
132. Other ill defined causes	4	2	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	3	1	....	2	1	1	4	....	....	..	1	1	..	2	..	..	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	5	....	12	....	....	12	....	....	..	..	..	..	1	2	2	3	..	2	1	1

CAUSES OF DEATH BY TOWNS—SMITH'S FALLS, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	0.1	1.	2.	3.	4.																																
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	95	23	4	1	1	..	3	..	1	12	5	6	7	13	9	9	1	49	46	....	75	20	....	47	48	....	7	4	5	10	5	7	12	10	7	11	10	7
Group Total	4	2	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	2	2	....	4	....	....	4	....	....	1	..	2	..	..	..	..	1	..	..	..	..
1. Typhoid Fever	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
7. Diphtheria and Croup	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
9. Dysentery	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																						
Group Total	13	....	..	..	..	..	..	..	..	6	2	2	2	1	..	..	..	4	9	....	11	2	..	5	8	....	2	..	..	2	1	3	1	1	1	1	..
13. Tuberculosis of lungs	5	....	..	..	..	..	..	..	..	3	1	..	..	1	..	..	..	2	3	....	4	1	....	2	3	....	..	..	..	1	..	2	1	..	..	..	1	..
21. General tuberculosis	5	....	..	..	..	..	..	..	..	2	..	2	1	..	..	..	..	1	4	....	5	..	....	2	3	....	2	..	..	1	..	1	..	..	1	..	..	..
30. Cancer of other unspecified organs	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
34. Anæmia, leukæmia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
37. Other general diseases	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..

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SMITH'S FALLS.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	12	3	..	..	..	..	..	..	..	1	1	..	1	3	1	2	..	5	7	....	11	1	....	4	8	....	..	1	1	..	1	..	2	..	3	2	..	2
130. Dropsy	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
131. Heart failure	8	....	..	..	..	..	..	..	..	1	1	..	1	2	1	2	..	4	4	....	7	1	....	1	7	....	..	1	1	..	..	..	2	..	1	2	..	1
132. Other ill-defined causes	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	..	1	..	..	..	2	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	..	..	..	3	..	..	..	..	..

CAUSES OF DEATH BY TOWNS—TORONTO JUNCTION, 1907.

Causes of Death.	Totals.	Ages.																	Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5–9	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.																							
		0.1	1.	2.	3.	4.												Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	177	75	6	..	1	2	1	2	6	23	12	9	8	13	10	8	1	100	77	....	143	34	....	114	62	1	10	22	9	7	15	15	17	21	25	13	16	17
Group Total	12	4	..	..	..	1	..	..	1	1	1	4	..	..	..	..	..	7	5	....	9	3	....	7	5	....	..	..	1	..	2	2	..	..	1	3	1	2
1. Typhoid fever	4	....	..	..	..	..	..	..	..	1	1	2	..	..	..	..	..	3	1	....	1	3	....	1	3	....	..	..	..	..	..	..	..	..	1	..	1	2
4. Measles	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
6. Whooping cough	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	....	....	3	....	....	3	....	....	..	..	..	..	1	2	..	..	..	..	..	..
7. Diphtheria and croup	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	1	..	..
10. Erysipelas	3	....	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	1	2	....	3	....	....	1	2	....	..	..	1	..	..	..	..	..	..	2	..	..
(*B. Other General Diseases.*)																																						
Group Total	20	4	..	..	..	..	..	..	3	7	2	..	2	..	2	..	..	7	13	....	17	3	....	12	8	....	..	3	1	1	..	3	1	5	2	..	2	2
12. Septicæmia	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	1	..	..	..	..	..	..	..	1	..
13. Tuberculosis of lungs	7	....	..	..	..	..	..	..	3	4	..	..	..	..	..	..	..	2	5	....	6	1	....	5	2	....	..	1	..	1	..	1	..	1	..	..	1	1

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TORONTO JUNCTION.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII. THE PUERPERAL STATE.																																						
Group Total	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
108. Other causes incident to childbirth	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	1	....	....	....	....	1	..	..	..	..	..	1	..	..	..	..	..	..
112. Other diseases of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	1	....	....	....	....	1	..	..	..	..	..	1	..	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	1	..	..	..	..	..	1	..
116. Congenital malformations (still-births excluded)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	1	..	..	..	..	..	1	..
XI. EARLY INFANCY.																																						
Group Total	17	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	6	....	17	....	....	17	....	....	..	2	..	1	3	2	2	..	3	2	1	1
117. Premature birth	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	2	....	10	....	....	10	....	....	..	2	..	1	2	2	1	..	..	..	1	1
118. Congenital debility	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	....	7	....	....	7	....	....	..	..	..	..	1	..	1	..	3	2	..	..
119. XII. OLD AGE.																																						
Group Total	6	....	..	..	..	..	..	..	..	..	..	..	..	1	2	3	..	4	2	....	3	3	....	....	6	....	1	2	1	..	1	..	1	..	..	..	..	..
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	18	....	..	..	..	..	..	..	1	12	3	..	2	..	..	..	..	17	1	...	16	2	..	13	5	....	1	1	..	..	..	1	9	1	1	1	..	3
123. Physical phenomena	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	...	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
124. Drowning	9	....	..	..	..	..	..	..	1	8	..	..	..	..	..	..	..	9	....	....	9	....	....	9	....	....	..	..	..	..	..	..	9	..	..	..	..	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
127. Other accidental traumatisms	7	....	..	..	..	..	..	..	..	2	3	..	2	..	..	..	..	7	....	....	5	2	....	2	5	....	1	1	..	..	..	..	..	1	1	1	..	2
XIV. ILL-DEFINED DISEASES.																																						
Group Total	13	6	1	..	..	..	..	..	..	..	1	..	..	2	1	2	..	5	8	....	9	4	....	8	5	....	1	1	2	..	..	..	..	1	3	3	..	2
130. Dropsy	3	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	2	....	2	1	....	1	2	....	..	..	..	..	..	..	..	1	..	..	..	2
131. Heart failure	4	....	..	..	..	..	..	..	..	..	1	..	..	..	1	2	..	1	3	....	2	2	...	1	3	....	..	1	2	..	..	..	..	..	..	1	..	..
132. Other ill-defined causes	6	5	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	....	5	1	....	6	....	....	1	..	..	..	..	..	..	1	2	2	..	..
134. XV. STILL BIRTHS.																																						
Group Total	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	5	....	12	....	....	12	....	....	.	2	1	1	1	1	1	3	1	1	..	..

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CAUSES OF DEATHS BY TOWNS—OWEN SOUND, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(A. Epidemic Diseases.)																																					
Grand Total	227	56	6	1	5	3	4	4	5	22	17	14	23	18	23	26	..	114	113	....	180	47	....	111	115	1	24	19	27	14	30	17	11	14	17	17	16	21
Group Total	16	4	1	..	3	1	2	1	..	2	1	..	..	..	1	..	..	8	8	....	14	2	....	15	1	....	1	1	..	..	..	..	1	2	4	3	..	4
1. Typhoid Fever	3	....	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	3	....	....	2	1	....	3	....	....	..	..	..	..	..	..	..	1	1	..	1
4. Measles	3	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	..	..	..	..	..	..	..	..	3
5. Scarlet Fever	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	....	2	1	....	3	....	....	..	..	..	..	..	..	..	1	2	..	..	..
7. Diphtheria and Croup	4	....	..	..	2	1	..	1	..	..	..	..	..	..	..	..	..	1	3	....	4	....	....	4	....	....	..	..	..	..	..	..	..	1	1	2	..	..
9. Dysentery	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
10. Erysipelas	1	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
(B. Other General Diseases.)																																					
Group Total	39	1	..	..	1	..	..	1	2	9	8	5	5	3	3	1	..	18	21	....	33	6	....	15	23	1	7	2	3	2	4	3	2	3	2	4	5	2
12. Septicæmia	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..
13. Tuberculosis of lungs	13	....	..	..	..	..	..	1	1	6	4	..	1	..	..	..	..	4	9	....	13	....	....	7	6	....	3	..	1	1	2	..	1	1	1	2	1	..
15. Tuberculous Meningitis	2	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	1	..	..	1	..	..	..	..	..
21. General Tuberculosis	2	....	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	1	..	..	..	..	1	..	..	..	..
23. Venereal Diseases	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
25. Cancer of stomach and liver	3	....	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	2	1	....	2	1	....	....	3	....	1	1	..	..	..	..	..	..	..	..	..	1
26. Cancer of Intestines	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
30. Cancer of other unspecified organs	2	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	1	1	....	....	2	....	..	..	..	..	1	1	..	..	..	..	..	..
31. Tumors	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
32. Rheumatism	2	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	....	....	2	....	....	1	1	....	..	..	..	..	..	..	..	..	..	1	1	..
33. Diabetes	2	....	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	1	....	1	1	....	1	1	....	1	..	..	..	..	..	..	..	..	1	..	..
34. Anæmia, leukæmia	6	....	..	..	..	..	..	..	..	2	1	..	1	..	1	1	..	3	3	....	5	1	....	1	4	1	2	..	1	..	1	..	1	..	..	..	..	..
37. Other general diseases	2	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	..	..	..	..	..	1	..

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OWEN SOUND.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII.—THE PUERPERAL STATE.																																						
Group Total	3	....	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	...	3	....	3	....	....	....	3	....	..	1	..	1	..	..	..	..	..	1	..	..
107. Puerperal convulsions	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
108. Other causes incident to childbirth	2	....	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	1	..	..	..	..	..	1	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
109. Gangrene	1	....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..
116. Congenital malformations (still-births excluded)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..
XI. EARLY INFANCY.																																						
Group Total	14	14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	6	....	14	....	....	14	....	....	1	3	..	..	1	..	2	3	2	..	1	1
117. Premature Birth	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	....	6	....	....	6	....	....	1	..	..	..	..	..	1	1	1	..	1	1
118. Congenital debility	8	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	..	3	..	..	1	..	1	2	1	..	..	..
119. XII.—OLD AGE.																																						
Group Total	19	....	..	..	..	..	..	..	..	..	..	..	..	..	4	15	..	10	9	....	4	35	....	1	18	....	4	4	1	3	5	1	..	..	..	..	..	1
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	5	....	..	..	..	..	..	..	..	3	1	1	..	..	..	..	..	4	1	....	5	....	....	....	5	....	..	..	2	..	..	1	..	..	..	..	1	1
122. Burns and scalds	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	1	..
127. Other accidental traumatisms	3	....	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	3	....	....	3	....	....	....	3	....	2	..	..	..	..	..	..	..	..	..	..	1
XIV. ILL-DEFINED DISEASES.																																						
Group Total	7	2	..	..	..	..	..	..	..	..	..	..	2	1	1	1	..	4	3	....	4	3	....	2	5	....	1	..	1	..	1	3	1	..	..	..	..	..
130. Dropsy	2	....	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	1	....	1	1	....	....	2	....	1	..	..	..	..	1	..	..	..	..	..	..
131. Heart Failure	3	....	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	2	1	....	1	2	....	....	3	....	..	..	1	..	..	2	..	..	..	..	..	..
132. Other ill-defined causes	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	1	..	1	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	11	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	2	....	11	....	....	11	....	....	..	1	2	1	3	2	1	..	..	..	1	..

CAUSES OF DEATHS BY TOWNS—PEMBROKE, 1907.

Causes of Death.	Total.	Ages. Under 5. 0.1.	1.-2.	3.-4.	5.	5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	105	39	4	2	2	1	..	4	5	9	4	2	6	13	9	4	1	57	48	....	89	16	....	68	36	1	12	16	5	7	7	4	6	13	13	9	1	12
Group Total	8	3	2	..	..	..	..	1	1	1	..	..	..	..	..	..	..	5	3	....	7	1	....	8	....	....	1	1	..	..	..	..	..	..	2	..	..	4
1. Typhoid fever	3	....	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	2	1	....	2	1	....	3	....	....	..	..	..	..	..	..	..	..	2	..	..	1
4. Measles	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	..	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
5. Scarlet fever	2	....	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	..	..	..	..	..	..	..	..	..	..	2
7. Diphtheria and Croup	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
8. Influenza	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
(*B. Other General Diseases.*)																																						
Group Total	15	....	..	..	1	..	..	..	3	5	..	..	2	3	1	..	..	8	7	....	13	2	....	8	7	....	1	4	..	3	1	..	1	1	2	1	..	1
13. Tuberculosis of lungs	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
15. Tuberculous meningitis	1	....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
21. General tuberculosis	5	....	..	..	..	..	..	1	3	..	..	1	..	..	..	..	..	3	2	....	5	....	....	3	2	....	..	1	..	1	..	..	..	2	1	..	..
28. Cancer of breast	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
30. Cancer of other unspecified organs	2	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	1	1	....	....	2	....	..	1	..	..	..	..	1	..	..	..	..	..
32. Rheumatism	2	....	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	....	....	2	....	....	....	2	....	..	1	..	..	..	..	..	1	..	..	..	..
34. Anæmia, leukæmia	2	....	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	....	....	2	....	....	2	....	....	..	1	..	..	1	..	..	..	..	..	..	..
37. Other general diseases	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	12	1	..	..	1	1	..	2	..	..	..	1	2	2	1	1	..	7	5	....	8	4	....	5	7	....	..	1	1	..	1	1	2	2	1	..	1
39. Meningitis	5	1	..	..	1	1	..	2	..	..	..	..	..	..	..	..	..	2	3	....	4	1	....	5	....	....	..	..	..	..	..	..	..	2	2	..	..	1
40. Locomotor ataxia	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..	..
42. Apoplexy	2	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	....	....	1	1	....	....	2	....	..	1	..	..	..	..	..	..	..	1	..	..
43. Softening of brain	1	....	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	....	....	....	1	....	....	....	1	....	..	..	..	..	1	..	..	..	..	..	..	..
44. Paralysis	3	....	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	2	1	....	1	2	....	....	3	....	..	..	..	1	..	1	1	..	..	..	..	..

PEMBROKE.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	3	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	1	....	2	1	....	1	2	....	..	..	1	..	1	..	..	..	..	1	..	..
54. Heart disease	2	....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	....	....	1	1	....	....	2	....	..	..	..	..	1	..	..	..	1	..	..
60. Other diseases of circulatory system	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	14	4	1	2	..	..	..	..	..	1	1	1	..	2	2	..	..	7	7	....	14	....	....	8	6	....	4	3	1	1	1	2	..	1	..	..	..	1
63. Acute bronchitis	5	2	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	3	2	....	5	....	....	4	1	....	2	..	..	1	..	1	..	1	..	..	..	..
66. Pneumonia	8	2	..	1	..	..	..	..	..	1	1	1	..	1	1	..	..	4	4	....	8	....	....	4	4	....	2	3	1	..	1	1	..	..	..	..	..	..
67. Pleurisy	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	13	11	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	6	7	....	13	....	....	13	....	....	..	..	..	..	1	..	..	6	3	2	..	1
80. Diarrhœa and enteritis, (under 2 years)	12	11	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	7	....	12	....	....	12	....	....	..	..	..	..	..	..	..	6	3	2	..	1
92. Appendicitis	1	....	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
VI. DISEASES OF GENITO-URINARY SYSTEM.																																						
Group Total	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	....	1	1	....	1	1	....	..	1	..	..	..	..	1	..	..	..	..	..
95. Bright's disease	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	1	..	..	..	..	..	..	..	..	..	..
96. Other diseases of kidneys	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
VII. THE PUERPERAL STATE.																																						
Group Total	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
107. Puerperal convulsions	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	...	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
VIII DISEASES OF SKIN.																																						
Group Total	2	....	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	....	2	....	1	....	....	1	1	....	..	..	..	..	..	..	..	..	..	1	..	1
111. Abscess	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
112. Other diseases of skin	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..
XI. EARLY INFANCY.																																						
Group Total	9	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	3	....	9	....	....	9	....	....	3	1	1	..	1	..	..	1	1	..	1	..
117. Premature birth	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	3	....	....	3	....	....	2	..	1	..	..	..	..	..	..	..	..	..
118. Congenital debility	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	....	6	....	....	6	....	....	1	1	..	..	1	..	..	1	1	..	1	..

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Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
(B. Other General Diseases.)																																						
Group Total	25	2	..	..	..	..	1	1	1	2	5	1	1	7	2	1	1	6	19	....	17	8	....	12	13	....	..	5	..	1	3	2	2	2	3	1	4
13. Tuberculosis of lungs	2	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	....	2	....	1	1	....	1	1	....	..	..	..	..	..	..	..	..	1	..	1
15. Tuberculous meningitis	2	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	2	....	2	....	....	2	....	....	..	..	..	..	..	1	..	..	1	..	..	..
20. Tuberculosis of other organs	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
21. General Tuberculosis	4	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	2	2	....	4	....	....	3	1	....	..	2	..	..	..	..	1	..	1	..	..
23. Venereal diseases	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
24. Cancer of mouth	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
25. Cancer of stomach and liver	3	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	1	2	....	2	1	....	1	2	....	..	1	..	..	..	..	..	..	..	..	..	2
30. Cancer of other unspecified organs	3	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	2	....	2	1	....	....	3	....	..	..	..	..	1	..	1	1	..	..	..	..
32. Rheumatism	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	1	..	..	..	..	..	..	..	..	..	..
33. Diabetes	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	1	1	..	..	..	..	..
34. Anæmia, leukæmia	5	..	..	..	..	..	..	..	..	..	1	..	..	3	1	..	..	2	3	....	2	3	...	1	4	....	..	1	..	1	1	..	1	..	..	1	..	..
37. Other general diseases	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																						
Group Total	13	..	..	..	..	1	1	1	..	1	1	..	2	3	3	..	8	5	....	9	4	....	4	9	....	..	..	2	2	1	3	1	..	2	1	..	1
39. Meningitis	3	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	1	2	....	3	....	....	2	1	....	..	..	1	..	..	..	..	..	1	..	..	1
42. Apoplexy	5	..	..	..	..	..	..	..	..	..	1	..	..	1	3	..	..	3	2	....	4	1	....	....	5	....	..	..	..	1	1	..	1	..	1	1	..	..
43. Softening of brain	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
44. Paralysis	3	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	2	1	....	1	2	....	1	2	....	..	..	1	..	..	2	..	..	..	..	..	..
49. Convulsions	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	1	..	..	..	..	..	..	..	..
III. DISEASES OF CIRCULATORY SYSTEM.																																						
Group Total	14	..	..	..	..	..	..	..	..	..	..	3	1	4	2	4	..	9	5	....	7	7	....	3	11	....	2	2	3	2	1	..	..	..	..	2	2
54. Heart Disease	7	..	..	..	..	..	..	..	..	..	..	2	..	2	1	2	..	6	1	....	3	4	....	2	5	....	1	1	2	1	1	..	..	..	..	1	..
55. Angina pectoris	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	..	..	..	..	..	..	..	..	..	..	1
56. Diseases of arteries	4	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	..	1	3	....	2	2	....	....	4	....	1	1	..	..	..	..	..	..	..	1	1
57. Embolism and thrombosis	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	....	..	1	....	....	1	....	..	..	..	1	..	..	..	..	..	..	..	..
60. Other diseases of circulatory system	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	....	1	..	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	..
IV. DISEASES OF RESPIRATORY SYSTEM.																																						
Group Total	16	3	1	1	..	1	1	..	..	1	..	..	..	2	4	2	..	10	6	....	10	6	....	9	7	....	1	7	3	1	1	..	..	..	1	..	..	2
63. Acute bronchitis	5	..	1	1	..	..	1	..	..	..	..	..	..	..	2	..	..	3	2	....	3	2	....	4	1	....	.	3	2	..	..	..	..	..	..	..	..	..
65. Broncho-pneumonia	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	..	1	..	..	..	..	..	..	..	..	..	..
66. Pneumonia	7	2	..	..	..	..	..	..	..	..	..	..	..	2	1	2	..	4	3	....	4	3	....	3	4	....	..	3	..	1	1	..	..	..	1	..	1
67. Pleurisy	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	....	..	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
70. Asthma and emphysema	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	1	..	..	..	..	..	..	..	..	..
72. Other diseases of respiratory system, phthisis excepted	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....	1	..	....	1	..	....	1	..	..	..	..	..	..	..	..	..	..	..
V. DISEASES OF DIGESTIVE SYSTEM.																																						
Group Total	16	9	1	..	..	..	..	1	..	..	1	2	..	1	..	1	..	10	6	....	12	4	....	13	3	....	1	..	..	..	1	..	2	2	7	1	1	1
77. Gastritis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	....	1	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..

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CAUSES OF DEATH BY TOWNS—SAULT ST. MARIE, 1907.

Causes of Death.	Total.	Ages.																Sex.			Nativity.			Social Con.			Month.											
		Under 5.					5-9.	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		0.1	1.	2.	3.	4.																															
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																					
(*A. Epidemic Diseases.*)																																					
Grand Total	**140**	**44**	**3**	**2**	**2**	**2**	**5**	**1**	**3**	**15**	**19**	**9**	**14**	**6**	**3**	**8**	**4**	**89**	**50**	**1**	**86**	**38**	**16**	**88**	**42**	**10**	**9**	**14**	**9**	**11**	**14**	**13**	**11**	**9**	**11**	**13**	**14**	**12**
Group Total	13	2	..	1	..	1	..	..	..	4	2	1	..	..	..	..	2	11	2	....	9	4	...	11	2	....	3	1	1	..	1	..	2	1	..	2	..	2
1. Typhoid fever	8	....	..	1	..	..	..	..	..	2	2	1	..	..	..	..	2	6	2	....	5	3	....	6	2	....	..	1	1	..	..	..	1	1	..	2	..	2
4. Measles	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	....	....	2	....	...	2	....	....	1	..	..	..	1	..	..	..	..	..	..	..
7. Diphtheria and Croup	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
9. Dysentery	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	....	1	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
10. Erysipelas	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																					
Group Total	20	2	..	..	..	..	..	..	..	2	7	3	6	2	2	..	2	14	12	....	17	6	3	7	17	2	2	2	1	3	..	2	5	1	..	2	5	3
12. Septicæmia	3	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	2	....	3	....	....	2	1	....	..	1	..	..	..	..	..	..	..	..	..	2
13. Tuberculosis of lungs	10	1	..	..	..	..	..	..	..	..	4	1	2	..	1	..	1	6	4	....	6	3	1	4	6	....	1	1	1	..	..	1	1	1	..	..	3	1
15. Tuberculous meningitis	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	....	....	1	....	1	....	....	..	..	..	..	..	..	..	..	..	..	1	..
19. White swelling	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	....	....	....	1	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
21. General tuberculosis	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	....	1	....	....	....	....	1	..	..	..	..	1	..	..	..	..	..	..	..
28. Cancer of breast	2	....	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	....	2	....	2	....	....	....	2	....	..	..	..	..	..	1	..	..	..	..	1	..
30. Cancer of other unspecified organs	4	....	..	..	..	..	..	..	..	..	1	..	1	1	1	..	..	1	3	....	3	....	1	....	4	....	1	..	..	2	..	..	..	..	..	1	..	..
31. Tumors	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..
32. Rheumatism	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	1	....	....	....	1	....	..	..	..	..	..	1	..	..	..	..	..	..
34. Anæmia, leukæmia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	....	1	....	1	....	..	..	..	..	..	..	1	..	..	..	..	..
35. Alcoholism	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	....	....	1	....	....	....	1	..	..	..	..	..	1	..	..	..	..	..	..
II. DISEASES OF NERVOUS SYSTEM.																																					
Group Total	15	5	2	1	1	..	3	..	..	..	..	1	..	2	..	..	..	8	7	....	13	1	1	13	2	....	1	5	..	..	4	1	..	..	1	1	1	1
39. Meningitis	8	2	2	..	1	..	3	..	..	..	..	..	..	..	..	..	..	4	4	....	8	....	....	8	....	....	..	3	..	..	2	1	..	..	1	..	1	..
42. Apoplexy	2	....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	1	....	1	....	1	1	1	....	..	1	..	..	1	..	..	..	..	..	..	..
49. Convulsions	5	3	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	3	2	....	4	1	....	4	1	....	1	1	..	..	1	..	..	..	1	..	1	..

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SAULT STE. MARIE—*Continued.*

Number of column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	7	2	..	..	..	..	..	..	..	1	2	..	1	..	..	1	..	4	3	....	3	3	1	4	3	....	..	1	1	1	3	..	..	..	..	1	..	..
131. Heart failure	3	....	..	..	..	..	..	..	..	..	1	..	1	..	.	1	..	1	2	....	1	2	....	....	3	..	..	..	..	1	1	..	..	..	..	1	..	..
132. Other ill defined causes	4	2	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	3	1	....	2	1	1	4	....	....	..	1	1	..	2	..	..	..	..	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	5	....	12	....	....	12	....	....	..	..	..	..	1	2	2	3	..	2	1	1

CAUSES OF DEATH BY TOWNS—SMITH'S FALLS, 1907.

Causes of Death.	Totals.	Ages.																Sex.			Nativity.			Social Con.			Months.											
		Under 5.																																				
Number of Column.		0.1	1.	2.	3.	4.	5–9.	10–14.	15–19.	20–29.	30–39.	40–49.	50–59.	60–69.	70–79.	80 and over.	Not stated.	Male.	Female.	Not stated.	Canada.	Foreign.	Not stated.	Single.	Married.	Not stated.	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I.—GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	95	23	4	1	1	..	3	..	1	12	5	6	7	13	9	9	1	49	46	....	75	20	....	47	48	....	7	4	5	10	5	7	12	10	7	11	10	7
Group Total	4	2	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	2	2	....	4	....	....	4	....	....	1	..	2	..	..	..	..	1	..	..	..	..
1. Typhoid Fever	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	1	..	..	..	..	..	..	..	..	..	..	..
6. Whooping Cough	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	1	..	..	..	..	..
7. Diphtheria and Croup	1	....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
9. Dysentery	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	....	1	....	....	1	....	....	..	..	1	..	..	..	..	..	..	..	..	..
(*B. Other General Diseases.*)																																						
Group Total	13	....	..	..	..	..	..	..	..	6	2	2	2	1	..	..	..	4	9	....	11	2	..	5	8	....	2	..	.	2	1	3	1	1	1	1	..
13. Tuberculosis of lungs	5	....	..	..	..	..	..	..	..	3	1	..	..	1	..	..	..	2	3	....	4	1	....	2	3	....	..	..	..	1	..	2	1	..	..	..	1	..
21. General tuberculosis	5	....	..	..	..	..	..	..	..	2	..	2	1	..	..	..	..	1	4	....	5	..	....	2	3	....	2	..	..	1	..	1	..	..	1	..	..	..
30. Cancer of other unspecified organs	1	....	.	..	..	..	..	..	..	..	1	..	..	..	..	..	..	....	1	....	....	1	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
34. Anæmia, leukæmia	1	....	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	....	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	1	..	..
37. Other general diseases	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..

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SMITH'S FALLS.—*Concluded.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
XIV. ILL-DEFINED DISEASES.																																						
Group Total	12	3	..	..	..	..	..	..	.	1	1	..	1	3	1	2	..	5	7	....	11	1	....	4	8	....	..	1	1	..	1	..	2	..	3	2	..	2
130. Dropsy	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1
131. Heart failure	8	....	..	..	..	..	..	..	..	1	1	..	1	2	1	2	..	4	4	....	7	1	....	1	7	....	..	1	1	..	..	..	2	..	1	2	..	1
132. Other ill-defined causes	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	..	1	..	..	..	2	..	..	..
134. XV. STILL BIRTHS.																																						
Group Total	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	....	3	....	....	3	....	....	..	..	..	..	..	..	3	..	..	..	..	..

CAUSES OF DEATH BY TOWNS—TORONTO JUNCTION, 1907.

Causes of Death.	Totals.	Ages. Under 5. 0.1	1.	2.	3.	4.	5-9	10-14.	15-19.	20-29.	30-39.	40-49.	50-59.	60-69.	70-79.	80 and over.	Not stated.	Sex. Male.	Female.	Not stated.	Nativity. Canada.	Foreign.	Not stated.	Social Con. Single.	Married.	Not stated.	Months. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
I. GENERAL DISEASES.																																						
(*A. Epidemic Diseases.*)																																						
Grand Total	177	75	6	..	1	2	1	2	6	23	12	9	8	13	10	8	1	100	77	....	143	34	....	114	62	1	10	22	9	7	15	15	17	21	25	13	16	17
Group Total	12	4	..	..	..	1	..	..	1	1	1	4	..	..	..	..	..	7	5	....	9	3	....	7	5	....	..	..	1	..	2	2	..	..	1	3	1	2
1. Typhoid fever	4	....	..	..	..	..	..	..	..	1	1	2	..	..	..	..	..	3	1	....	1	3	....	1	3	....	..	..	..	..	..	..	..	..	1	..	1	2
4. Measles	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	1	..	..	..	..	..	..	..
6. Whooping cough	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	....	....	3	....	....	3	....	....	..	..	..	..	1	2	..	..	..	..	..	..
7. Diphtheria and croup	1	....	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	..
10. Erysipelas	3	....	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	1	2	....	3	....	....	1	2	....	..	..	1	..	..	..	..	..	2	..	..
(*B. Other General Diseases.*)																																						
Group Total	20	4	..	..	..	..	..	..	3	7	2	..	2	..	2	..	..	7	13	....	17	3	....	12	8	....	..	3	1	1	..	3	1	5	2	..	2	2
12. Septicæmia	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	2	....	2	....	....	1	1	....	..	..	1	..	..	..	..	..	..	..	1	..
13. Tuberculosis of lungs	7	....	..	..	..	..	..	..	3	4	..	..	..	..	..	..	..	2	5	....	6	1	....	5	2	....	..	1	..	1	..	1	..	1	1	..	1	1

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TORONTO JUNCTION.—*Continued.*

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
VII. THE PUERPERAL STATE.																																						
Group Total	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
108. Other causes incident to childbirth	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..
VIII. DISEASES OF SKIN.																																						
Group Total	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	1	....	....	....	....	1	..	..	..	..	..	1	..	..	..	..	..	..
112. Other diseases of skin	1	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1	....	1	....	....	....	....	1	..	..	..	..	..	1	..	..	..	..	..	..
X. MALFORMATIONS.																																						
Group Total	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	1	..	..	..	..	..	1	..
116. Congenital malformations (still-births excluded)	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	....	2	....	....	2	....	....	..	..	..	..	1	..	..	..	..	..	1	..
XI. EARLY INFANCY.																																						
Group Total	17	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	6	....	17	....	....	17	....	....	..	2	..	1	3	2	2	..	3	2	1	1
117. Premature birth	10	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	2	....	10	....	....	10	....	....	..	2	..	1	2	2	1	..	..	..	1	1
118. Congenital debility	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	4	....	7	....	....	7	....	....	..	..	..	..	1	..	1	..	3	2	..	..
119. XII. OLD AGE.																																						
Group Total	6	....	..	..	..	..	..	..	..	..	..	..	..	1	2	3	..	4	2	....	3	3	....	....	6	....	1	2	1	..	1	..	1	..	..	..	..	..
XIII. VIOLENCE AND OTHER EXTERNAL CAUSES.																																						
Group Total	18	....	..	..	..	..	..	..	1	12	3	..	2	..	..	..	..	17	1	...	16	2	..	13	5	....	1	1	..	..	..	1	9	1	1	1	..	3
123. Physical phenomena	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	...	....	1	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..
124. Drowning	9	....	..	..	..	..	..	..	1	8	..	..	..	..	..	..	..	9	....	....	9	....	....	9	....	....	..	..	..	..	..	..	9	..	..	..	..	..
126. Other accidental poisonings	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	....	1	....	....	1	....	....	..	..	..	..	..	..	..	..	..	..	..	1
127. Other accidental traumatisms	7	....	..	..	..	..	..	..	..	2	3	..	2	..	..	..	..	7	....	....	5	2	....	2	5	....	1	1	..	..	..	..	..	1	1	1	..	2
XIV. ILL-DEFINED DISEASES.																																						
Group Total	13	6	1	..	..	..	..	..	..	..	1	..	..	2	1	2	..	5	8	....	9	4	....	8	5	....	1	1	2	..	..	..	..	1	3	3	..	2
130. Dropsy	3	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	2	....	2	1	....	1	2	....	..	..	..	..	..	..	..	1	..	..	..	2
131. Heart failure	4	....	..	..	..	..	..	..	..	..	1	..	..	..	1	2	..	1	3	....	2	2	....	1	3	....	..	1	2	..	..	..	..	..	..	1	..	..
132. Other ill-defined causes	6	5	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	....	5	1	....	6	....	....	1	..	..	..	..	..	..	1	2	2	..	..
134. XV. STILL BIRTHS.																																						
Group Total	12	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	5	....	12	....	....	12	....	....	.	2	1	.	1	1	1	3	1	1	..	..

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